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ABSTRACT

This discussion paper examines mechanisms through which governments allocate resources to higher education, particularly in developing countries, in order to establish effective means to transfer these subsidies to institutions. The discussion of funding mechanisms develops within the context of three major types of government restrictions which have had an impact on institutional behavior: (1) controlling student enrollments; (2) imposing high financial dependency on universities through prohibiting revenue diversification; and (3) imposing restrictions on the extent to which institutions are able to allocate their funding as they see fit. These restrictions have resulted in institutional deterioration. The challenge is to find a way to grant universities more autonomy over decision making while ensuring accountability to the providers of the funding. One solution is seen in the use of buffer funding bodies that lie between the government and the institutions. Another solution is to change the criteria for allocation of resources. The paper goes on to review the experience with different categories of funding criteria. The paper also looks at Chile's approach which has been to transfer funds via students through loans or grants rather than directly to institutions. Included are numerous tables and 38 references. (JB)

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World Bank Discussion Papers

Funding Mechanisms for Higher Education

Financing for Stability, Efficiency, and Responsiveness

Douglas Albrecht
Adrian Ziderman

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Funding Mechanisms for Higher Education

Financing for Stability, Efficiency, and Responsiveness

Douglas Albrecht
Adrian Ziderman

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FOREWORD

The World Bank has long acknowledged the important relationship between education and economic development, and in particular, the critical role of higher education institutions in providing leadership for education systems as a whole. Ever since the World Bank began lending for education in 1963, its aim has been to assist developing countries expand and improve their education systems. But the rapid expansion of higher education systems over the last three decades, compounded by the more recent global economic crisis, has left many institutions short of funds in relation to the demands imposed on them. The impact has been most severe on institutions solely dependent on governments for funding. The result has been declining quality as well as insufficient funds to help many needy students meet high living costs associated with attending universities. It is therefore crucial that nations begin to find alternative or supplementary sources of revenue for institutions, as well as to utilize scarce resources more effectively and efficiently in pursuit of their educational objectives.

This study is part of a series on issues related to higher education reform and finance currently being conducted by the Education and Employment Division of the Population and Human Resources Department of the World Bank. The goal of this study is to help decision makers explore alternatives to improve the utilization of resources for their higher education institutions, in ways that promote quality and efficiency.

Ann O. Hamilton
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Population and Human Resources Department

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This paper is the second in a series of papers by the authors on issues related to higher education finance. The first paper, Deferred Cost Recovery for Higher Education: Student Loans in Developing Countries was issued in this series as World Bank Discussion Paper No. 137 (November, 1991).

ABSTRACT

In most countries, governments are the dominant source of university finance. This paper examines the mechanisms through which governments allocate resources to higher education, particularly in developing countries, in order to establish effective means to transfer these subsidies to institutions. Our discussion of funding mechanisms is developed within the context of three major types of restriction which have had an important impact on institutional behavior. The most far reaching of these is the extent of government control over student enrollments. Second, governments may impose high financial dependency on universities (by forbidding revenue diversification). Third, governments may impose restrictions on the extent that institutions are able to allocate their funding as they see fit.

In most developing countries, government policy in these three areas has placed institutions in a difficult position. It has been combined with a transfer of resources that has for the most part been on the basis of political criteria and negotiations, rather than criteria related to the internal workings of the universities. The result has often been a rapid erosion of financial resources in relation to enrollments, with little incentive or capacity for efficiency gains. The deterioration that has resulted will only be reversed through policy changes that will grant institutions more autonomy over enrollments and resources. The challenge facing governments is how to grant universities more autonomy over decision making, while ensuring accountability to the providers of funding.

One potential solution is the use of buffer funding bodies that lie between the government and the institutions, as a way to secure the independence of these institutions from direct political interventions. These buffer bodies have worked well when governments are willing to delegate true funding authority, but have often been undermined when financial pressures build up or when governments are unwilling to abdicate responsibility. Another solution, adopted in most industrial and a few developing countries, is to change the criteria for allocating resources. This paper reviews the experience with different categories of funding criteria. On the basis of "payment by results" reasoning, a funding allocation system would focus on the **output** of the higher education system, rewarding institutions according to their performance in producing graduates and post graduates (and research). Such an approach is particularly relevant to inefficient higher education systems. In contrast to the performance approach, funding can be allocated to universities according to the cost of higher education - the **input** method. The most popular variant employs formulas, usually based on multiplying enrollments by parameters of unit cost. Such a system may fail to offer correct incentives to universities to act efficiently (to avoid lowering entry standards and repeats, for example), unless it is carefully designed.

Another option, explored only in Chile, is to transfer funds via students (through loans or grants) rather than directly to institutions. The rationale behind student based funding is to facilitate student choice, stimulate competition amongst universities and to make universities more responsive to the needs of the labor market. A market oriented, student demand driven system (with extensive cost-recovery) may not be practicable in many country settings, especially where labor markets are highly distorted. Of course, it is possible to employ the two approaches in concert, splitting the subsidies between them.

Reform of higher education finance, in many countries, will first require that the broad policy framework within which universities operate be improved. This implies granting more autonomy to institutions over enrollment decisions, access to income from private sources and control over the deployment of staff and physical resources. Once universities have more autonomy, a funding mechanism should be developed that transfers resources to institutions in line with the actual costs of operation; that provides incentives for efficiency -- either through throughput measures, or output funding; and that encourages institutional differentiation, so that institutions are able to adapt to their local conditions and to respond more clearly to student and external demands.

Table of Contents

1. Overview 1
   - Introduction 1
   - Historical Perspectives 2
   - Subsidizing Institutions or Students? 4
   - The Policy Environment 8
   - Buffer Organizations 8
   - Direct Allocation Mechanisms 9

2. The Policy Environoment 12
   - Rapid Erosion of Resources 12
   - Admissions Controls 14
   - Finance Restrictions 15
   - Internal Allocations 16
   - Government Restrictions in Practice 17
   - Autonomy vs. Accountability 18

3. Negotiated Budgets 20
   - Types of Negotiated Funding 20
   - Consequences of Negotiated Funding 23
   - Conclusions 25

4. The Role of Buffer Organizations 26
   - Rationale and Function 27
   - Limits on Effectiveness 29

5. Input Funding 32
   - Types of Input Funding 33
   - An Input Funding Alternative: The Market Determines its Own Cost 36
   - Consequences of Input Funding 37
   - Conclusions 40

6. Output Funding 41
   - Experience with Output Funding 41
   - Consequences 42
   - Conclusions 44

7. Student Based Funding 45
Rationale for Channeling Subsidies via Students 45
Case Study: Chile 47
Problems with Student Based Funding 49

8. Options for Reform 51
Funding Dilemmas 51
General Principles for Improvements in Funding 53
Criteria and Conditions of Funding:
Encouraging Efficiency and Diversity 55

References 57

Box 1 : Early Instances of "Public" Intervention 3
Box 2 : Algeria and Argentina: The Consequences of a Weak Policy Environment 14
Box 3 : Funding India's Universities 22
Box 4 : Honduras: Funding in a One-University System 24
Box 5 : UK: Funding through the University Grants Committee 27
Box 6 : Funding Formulas and Weightings in Ontario 35
Box 7 : UK: Competitive Bidding 37
Box 8 : Nigeria: Macro-Economic Difficulties Undermine Input Funding 38

Table 1. Systems for Allocating Resources for Higher Education Selected Countries 11
Table 2. Real Expenditure vs. Enrollment Growth in Higher Education . 13
Table 3. Degree of Government Control in Higher Education Systems .. 17
Table 4. Actual Functions of Buffer Funding Bodies: Selected Countries 28
Table 5. Types of Cost and Input Funding Mechanisms 32
Table 6. Graduates vs. Dropouts in Dutch Universities 1980-1987 43

Chart I. Potential Pathways for Transfer of Government Resources 5

1 Overview

Introduction

In most countries, governments are the dominant source of university finance. This paper examines the mechanisms through which governments allocate resources to higher education, particularly in developing countries, in order to establish effective means to transfer these subsidies to institutions. Our concern is with the teaching, rather than the research function, of institutions of higher education. This paper does not engage in debates about the appropriateness of state intervention in support of the teaching function. We take as a given that state financial participation is substantial and will continue to be so. Rather, we ask how the financial intervention of the state can be made to be more effective.

The need to examine the efficiency of government financing of universities is becoming more pressing for a number of reasons. The growth in the social demand for higher education and the broader recognition of the need to improve the quality of teaching and research have coincided with structural adjustment, decreases in fiscal spending and increasingly tight budgets for higher education. Higher education poses a budgetary problem additionally, because it is so much more expensive than other levels of education: typically, on a per student basis, instructional costs range between 5 and 40 times that of primary education. Reforms in university finance, in terms of student fees and loans, that aim at reducing the financing role of the state are likely to play an important, though limited role only. The generation of additional resources will not be sufficient to make up for declines in the levels of government funding, and therefore it is necessary to examine how efficiently institutions operate. Thus available government support must be utilized as effectively as possible at the same time that governments consider mechanisms to generate private finance.

The mechanisms through which governments transfer funds for core activities to higher education institutions have an effect on the way in which these funds are used. Too often government concern is with the political acceptability of allocation or with the horizontal equity amongst higher education institutions and the regions and populations they serve. But such funding allocations fail to provide incentives for institutions to operate efficiently and indeed, may create a general climate that is not conducive to efficiency. An examination of how effectively such mechanisms operate and the constraints limiting improvements in these allocation systems constitute the focus of the present paper. While there is now a vast literature on the case for generating additional resources for higher education and on methods for doing so in practice, only few studies have examined the workings of allocation mechanisms and these have tended to skirt over the issue of how the particular allocation mechanism criteria used may affect university efficiency.

The limited literature has focused mainly on the allocations mechanisms in industrial countries; the United Kingdom and the Netherlands, particularly, have generated a series of such studies, because both countries have made allocation mechanisms a central part of higher education reform over the last decade[1/]. A larger literature has addressed the budgeting process in North American public university systems. In the developing world, literature has been more scarce. The most detailed studies have been conducted in India (Mridula 1985, Sharma and Sanyal 1990), while a number of studies have examined the extensive reforms in Chile (Brunner 1990, Castenada 1986). A recent study compared financing of higher education in twelve OECD member countries, with particular emphasis on allocation mechanisms (OECD 1990); this timely report was helpful in the preparation of the present paper. However, no detailed comparative studies seem to have been carried out with a developing country focus[2/].

A few developing countries have experimented with interesting financial reforms of their higher education systems. It will be important to note, however, that there is often a divergence between the way in which resources are supposed to be allocated and the ways in which they are actually transferred. Despite a few instances of reform, one of the principal arguments of this paper is that the higher education policy environment within which resources are transferred in most developing countries precludes productive reforms. Most institutions operate under stringent regulations imposed by governments with regard to enrollments, access to diverse sources of finance and internal allocations. Governments may justify their interventions as a means to ensure institutional accountability, but their efforts often lead to unintended consequences. This paper therefore seeks alternative strategies that will allow governments to grant more autonomy to higher education institutions while also preserving the justifiable need for accountability over government funds.

Historical Perspectives

Before the existence of the modern university, which appeared in Europe in the eleventh century, higher level instructions invariably took the form of students hiring teachers. In India, for example, students would attend the homes of Brahmin scholars who were hired and paid on the basis of their academic and moral reputation.

In most countries, higher education trained elite administrators and religious figures. In China, private schools developed to train people to become scholar administrators. In Ancient Greece, students paid itinerant scholars for moral and scientific training that was intended to prepare them to participate in public political life of the polis, as well as to help them to enlarge

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1/ See Barnes and Barr 1988; Shattock and Rigby 1983; and Hansen and Van Vught 1989.

2/ A brief, but insightful, discussion of funding mechanisms for Anglophone Africa is contained in Coombe (1991).

their private fortunes. In the Islamic World, students could hire teachers inside mosques for religious instruction: to this day, the al-Azhar university has preserved the tradition of students hiring scholars in the central mosque.

Box 1: Early Instances of "Public" intervention

A significant innovation in higher education came about during the Roman Empire. Initially, Roman education borrowed heavily from Greek traditions in science and the arts. However, in the first and second centuries, they developed the study of law, which was seen to be extremely important in preserving order throughout the Empire. At the same time, while the emperors showed no interest in supporting primary or secondary education, they did begin to provide financial aid to higher education and to provide endowments for particular chairs. A principal motivation for this support was to provide a well trained elite that could assist in managing the Empire.

The Byzantine emperors followed a similar tradition of endowing chairs and providing limited financial support. Constantine IX, for example, re-founded the so called "University of Constantinople", dividing it into a School of Law and a School of Philosophy in 1045 A.D. His major objective was to provide a sufficient supply of civil servants.

The renaissance period in Europe witnessed a flourishing of higher education institutions, financed mostly by students and the Catholic Church. The two major prototypes for this collective university arrangement appeared in Bologna and Paris. The Bologna institution was organized by students, who elected the administrative personnel for the institution. The student dominated prototype became common throughout southern Europe. In contrast, teachers administered the University of Paris.

A key feature of European universities as a whole was the development of areas of specialization. The Italian institutions were famous for their training in Medicine and Law, the French for religious and philosophical scholarship, and the northern institutions in England were well regarded for their natural theology programs. Dependence on student finance for survival meant that institutions had to develop differentiated areas of excellence.

The first instances of largely state supported universities were in Germany and France at the beginning of the nineteenth century. State intervention had a clear rationale: to provide necessary technical manpower for the state to foster industrial development. The University of Berlin and the Ecole Polytechnique in Paris were founded to provide technically trained experts to work in government. In addition, the Ecoles Normales were established to supply sufficient

teachers for the universities and secondary schools. Almost every European country followed in establishing publicly supported national university systems.

The universities essentially became employer-based training facilities, with the government as the primary employer meeting the educational costs. In the twentieth century, these systems expanded rapidly throughout the world, particularly as more countries sought to industrialize. The pattern of publicly supported institutions to provide administrative and technical manpower was exported to many developing countries that were colonies of European powers. The universities initially trained the "colonials" living in the country for the civil service (a less expensive option than educating them at home) as well as a selected few from the indigenous populations who could assist in staffing local governments. When these countries achieved independence, the structure for the university systems was already in place and most governments chose to expand these institutions rapidly, to replace the manpower void created by colonial withdrawal.

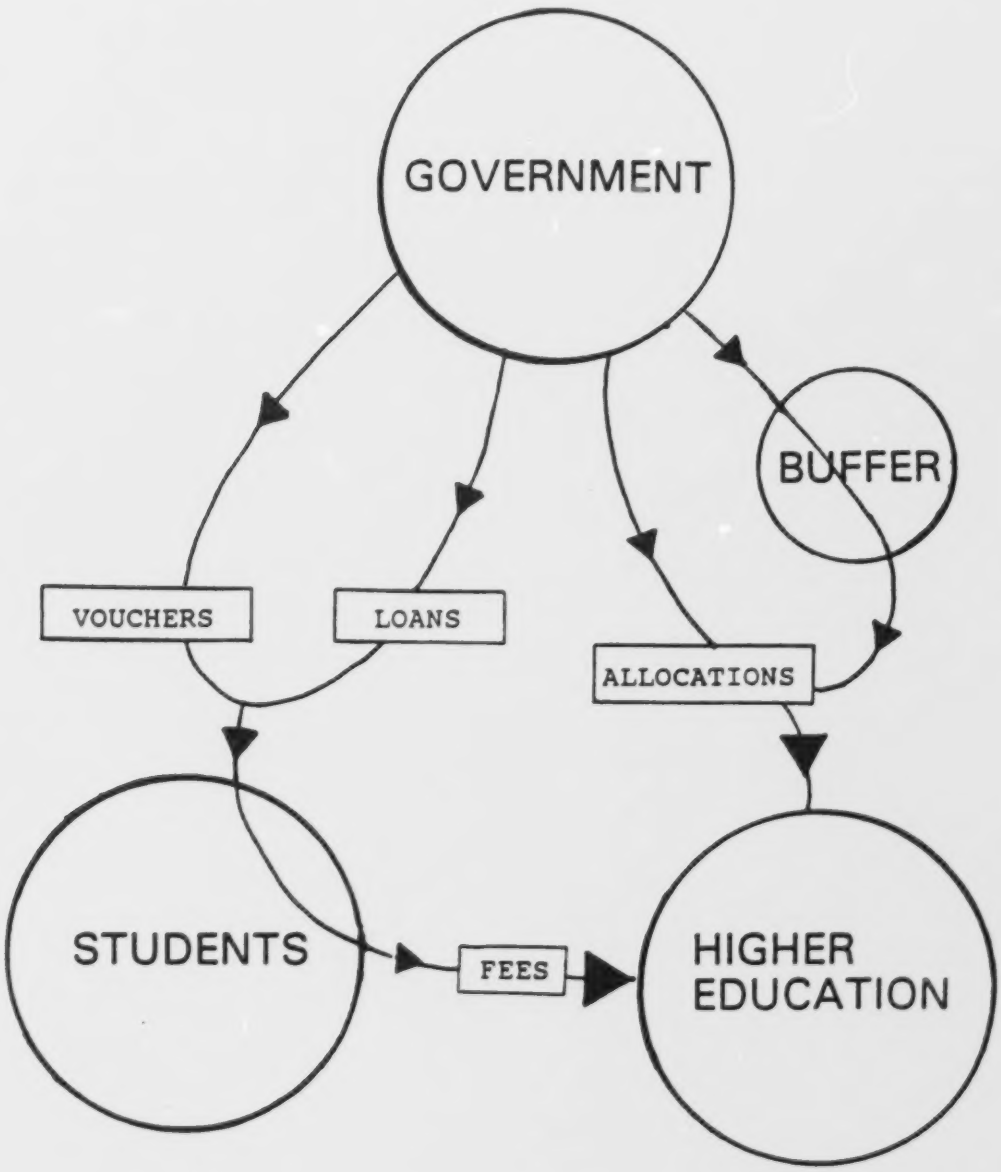
Higher education history reveals three important points relevant to the issues to be discussed in this paper. First, it shows the extent to which university funding has been dependent on student and not government funding; the universities were consumer demand-driven institutions. Second, as a consequence of this funding relationship, as well as the small size of higher education in general, instructors and institutions were much more responsive to student demands, exemplified by the pattern of student managed institutions in Southern Europe. Third, the rationale for massive state intervention in university funding -- training individuals for careers in the civil service -- is becoming increasingly less relevant to larger higher education systems and economies that are developing private sectors.

Subsidizing Institutions or Students?

Almost universally, government support of universities is effected by the direct transfer of funds from government to university institutions, or through an intermediary grants institution. The major thrust of this paper is with the efficacy of these transfer mechanisms now in place in different countries; against the background of constraints operative in different country settings, the paper will attempt to reach conclusions on the adequacy of presently used transfer mechanisms and possible options for improvement and reform.

Chart 1

POTENTIAL PATHWAYS FOR TRANSFER OF GOVERNMENT RESOURCES



While direct government transfer mechanisms (or through buffer organizations) will no doubt remain the dominant approach, it is both appropriate and instructive to broaden the discussion, to consider alternatives to present general practice which, while long debated in the literature, are beginning to attract attention in some systems undergoing reform,notably Chile. Such a discussion, in extending the menu of choice, will facilitate our task of laying out the range of financing options, even though some may not be immediately practical.

In principle, subsidization could take one (or both) of two main routes (given the level of public subsidy of the university system that society deems appropriate): subsidy payments could be made directly to the universities themselves, as is current practice, or to the students. In this paper, we leave aside the issue of the subsidy of student living expenses which, while accounting for a substantial portion of higher education budgets, are not expenditures on higher education, as such. Although this raises very important issues, it is not dealt with in the present paper. The rationale for doing so is that student support raises a separate set of issues concerning how students can finance the private costs of their education. Government funding for student support does not directly bear on the incentives under which university institutions operate.

The alternative funding paths are shown in the accompanying chart. While we show these paths as alternatives, this is to expedite the discussion; in practice, they are more likely to be used jointly as complementary approaches. The right-hand side of the chart illustrates direct allocations; subsidies are made directly from the government to the universities (or a buffer institution may be in place to effect the allocations). Higher education is made available free or at fairly nominal prices. But, the subsidy could be made via the students themselves, as shown on the left-hand side of the chart; students would pay tuition fees charged by university institutions, either wholly (or in part) through state vouchers of entitlement to university education or by subsidized student loans)[3/]. While the level of subsidy might be the same under these alternative institutional channels for allocation, both the rationale and the results are very different as we proceed to argue.

Gareth Williams has pointed to two very different approaches to the role of higher education institutions (OECD 1990): universities may be regarded as "service " institutions that can be relied upon to serve the wider interests of society and the economy, or they can be seen as "commercial enterprises" that provide services for the benefit of individuals. The former view has held sway, though less so in more recent years; it underlies much of the higher education expansion in Europe and in many developing countries in the recent decades, and justifies the heavy subsidization of a largely autonomous higher education sector. But the universities'

[3/] Vouchers, which were originally proposed for primary education (Friedman 1962), more recently have come to be seen as an appropriate policy tool for higher education; an extensive discussion, with applications to the United Kingdom, is given in Barnes and Barr, 1988.

responses and the wider needs of society, as perceived by governments, have not always coincided. In most countries this dissonance, buttressed by increasing pressures on public sector budgets, has lead the government, as the paymaster, to seek ways of exerting greater control over the higher education sector. This process constitutes a major theme of the present paper.

The second approach of Williams, which sees universities operating in the context of a producer-consumer relationship with students, receives support from the new human capital[4/] (and income augmenting) view of education and provides much of the rationale for moves towards increased cost recovery and tuition fee payment in university systems. There are three main benefits from such a regime: universities respond to student demand (reflecting relative earnings and shortages in the labor market); resources are generated for the system as students pay for (and therefore more highly value) college education; and universities are forced to compete for students (in terms of price, quality of education and subsequent marketability of skills provided). This view of higher education bears resemblance to the more traditional institutions context, prior to the nineteenth century. It is argued that this will achieve internal efficiency and societal relevance of the university system more successfully than does direct government support.

However, a market oriented, student demand driven system (with extensive cost-recovery) may not be practicable in many country settings, especially where labor markets are highly distorted. Nevertheless, in principle, it might be possible to achieve many of the benefits of a such a student-responsive system, without moving strongly towards fee payment and cost recovery. As shown in the chart, subsidies may be maintained at given (or other suitable) levels, but channelled through the students, in terms of vouchers or subsidized loans, thus facilitating student choice, stimulating competition amongst universities and making universities more responsive to the needs of the labor market. Of course, it is possible to employ the two approaches in concert, splitting the subsidies between them.

We return to this approach in Section 7, and discuss how it may be made operational with illustrations from recent experience in Chile. We should emphasize that the approach should not be seen as a full bodied alternative to direct financing mechanisms, but rather as supportive and complementary. To the extent that it has merit and is appropriate to given country situations, then elements of the approach could be incorporated into given funding procedures, with the aim of introducing more competition and efficiency among universities; recent finance reform in England reflects this line of thinking. Meanwhile, the rest of this section, as well as Sections 2 through 6 are concerned with direct allocations to universities.

[4/] It is also consistent with the "screening" model of education, as discussed in Section 7.

The Policy Environment

Although much is made of the virtues of university autonomy and academic freedom, it is generally the case that universities must function within an environment that is very much subject to government regulation and control. These restrictions not only influence the incentive structure and institutional behavior of universities but also, as we argue, influence the efficacy of the mechanisms of funding allocation.

Our discussion of funding mechanisms is developed within the context of three major types of restriction which have had an important impact on institutional behavior. The most far reaching of these is the extent of government control over student enrollment. Not only are heavy burdens placed on the higher education system by government-instituted automatic admissions policies (to meet upsurging demand for college education), but also restrictions may be placed on the types of courses (by level and field) that institutions may offer. Governments can raise the overall expenditure needs of institutions by forcing them to adopt relatively open admissions policies or to take students into high cost fields. Second, governments may impose high financial dependency on universities (by forbidding revenue diversification). The higher the dependency, the greater the likelihood of fluctuations in funding, and the more magnified are other forms of control. That is, government policy may require open admissions while at the same time failing to allow institutions to seek outside funding. Third, governments may impose restrictions on the extent that institutions are able to allocate their funding as they see fit. Such government restrictions on expenditures vary widely amongst different systems, though most governments impose controls on academic salaries and staffing patterns.

In Section 2 we consider the effect of these restrictions on university efficiency in more detail. For example, not only do constraints on the internal allocation of funds restrict the ability of institutions to act more efficiently; they also blunt the impact of incentive signals by government.

Buffer Organizations

Traditionally, government subsidies have been channeled to higher education institutions directly from ministries of education or finance, or from separate ministries of higher education (as is common in some African countries). However, some governments have tried to secure the independence of these institutions from direct political interventions by establishing intermediate funding agencies. These "buffer" bodies lie between a government and the universities, with the aim of insulating higher education institutions from direct government intervention. The classic model for a buffer is England's, recently defunct, University Grants Committee (UGC). The UGC was introduced in 1919 as a non-statutory body to advise the government on the financial needs of the universities, and to allocate public grants to them. Similar institutions exist in many British commonwealth countries, including Nigeria, Kenya,

Pakistan, India, Hong Kong, New Zealand and Zimbabwe as well as various other countries such as Israel and the Sudan.

While buffers are also to be found as research funding bodies (or research councils), where research funds are allocated on the basis of research status of individual university departments or project merit, our concern here, as in the paper as a whole, is with core operational funding. How far has the introduction of buffer funding bodies succeeded in insulating the university sectors from politicking, while at the same time promoting internal efficiency and accountability? The rather mixed experience from a sample of buffer organizations will be presented in Section 4.

Direct Allocation Mechanisms

Funding mechanisms currently in use vary widely across countries. What is the rationale that has underscored these mechanisms? The allocation of core funding from government to universities seems in practice to be based on one of three general criteria (or a combination of these). On the basis of "payment by results" reasoning, a funding allocation system would focus on the **output** of the higher education system, rewarding institutions according to their performance in producing graduates and post graduates (and research). Such an approach is particularly relevant to inefficient higher education systems; it would help counter high student dropout and repetition, that in turn may be fuelled by poor selection criteria and over generous programs of student maintenance support. There are only a very few instances of funding mechanisms that have adopted such an approach, and these are restricted to developed countries. At a practical level lies the problem of ensuring that quantity output objectives are not being achieved at the expense of quality of student achievement.

In contrast to the performance approach, funding can be allocated to universities according to the cost of higher education - the **input** method. The most popular method employs formulas, usually based on multiplying enrollments by parameters of unit cost (the "unit resource"). Such a system may fail to offer correct incentives to universities to act efficiently (to avoid lowering entry standards and repeats, for example), unless it is carefully designed. However, government imposed automatic admission policies may require some form of input based funding; as we shall show, however, increased admissions without parallel budgetary allocations have been used by governments to impose unit cost reductions on the higher education system (not necessarily without negative effects on quality).

Most governments, however, do not transfer funds using mechanisms that use criteria related to the internal workings of the universities. We group together those transfer mechanisms which do not utilize internally objective criteria as "negotiated funding". Individual allocations are usually based on those of the previous year, perhaps augmented by across-the-board incremental increases (thus militating against change in the system) or, more frequently, according to the power position or negotiating skills of the institutional actors. Negotiation

enables the government to maintain a high degree of political control over the university system as a whole as well as over individual institutions.

A review of experience in some 35 countries shows that in most cases, by far, allocation is made on a negotiated basis, and these are all developing countries (Table 1). In contrast, a smaller number of countries allocate funding according to inputs; these are mainly, but not exclusively, industrial countries, though the approach is used also in some developing countries in Asia and Africa. Relatively few countries employ performance-based criteria. We shall develop the argument more fully in Section 3, that negotiated systems of allocation, rooted as they are in the status quo, are unlikely to facilitate greater efficiency or dynamism in university systems (nor, indeed, to satisfy the needs of equity), in the existing milieu of budgetary stringency. Yet the pattern displayed in the table is not coincidental. Funding mechanisms will reflect the broader level of institutional development in the countries within which they function. Where political elbow or interest group pressures play a significant role in the process of the allocation of general government budgets, university funding is likely to be subject to these as well. However, not all negotiated funding operates in such an institutional milieu, and reform towards input or output based systems should be encouraged. But in practice there may be constraints on a move to more effective systems. Cost and performance funding of universities require fairly elaborate administrative procedures, data availability and reporting. These simply may not be available in many country settings.

The three forms of direct funding to institutions will be evaluated separately in Sections 3, 5 and 6, from three perspectives: the extent to which they have promoted or inhibited the stability, efficiency and responsiveness of institutions. Overall, we conclude that these goals, are for the most part, not being met. To summarize: (i) Funding has been **unstable** in relation to the activities expected of universities. Expansion has not been accompanied by increased public funding, and many institutions which are overwhelmingly dependent on government finance have witnessed fluctuations in their annual funding, making planning and continuity nigh impossible. (ii) While often underfunded, many universities have been **inefficient** in terms of resource utilization, staffing patterns as well as student flows. There are many reasons for this, but in many instances, neither institutions nor students have clear incentives to use scarce resources efficiently. (iii) Publicly funded institutions often have limited autonomy and remain **unresponsive** to labor market or student demands. Institutional diversification -- in terms of activities, areas of specialization and quality -- has been impeded, and few countries have established clear plans to allow institutions to differentiate and find areas of specialization. A final section of this paper will, therefore, develop principles which could guide reform so as to begin to resolve some of the funding problems in place, and allow public resources to be used more productively.

Table 1

Systems for Allocating Resources for Higher Education
(Selected Countries)

Direct Allocations to Institutions				Indirect Allocations
Negotiated **		Input Based	Output Based	Via Students
Algeria		Canada	Denmark	Chile
Argentina		China	Finland	
Brazil	*	England	* Israel	
Ghana		France	Netherlands	
Greece		Hungary		
Guinea		Indonesia		
Honduras	*	Japan		
* India	*	Nigeria		
Italy		Norway		
* Jordan	*	South Africa		
* Kenya		Sweden		
Morocco				
Nepal				
Niger				
* Pakistan				
Peru				
Philippines				
* Sudan				
Tanzania				
Venezuela				
Yemen				
↓				
↓				
↓				

* Indicates countries that utilize a buffer funding organization.
** List can be extended considerably.

2. The Policy Environment

Before moving into detail of how governments transfer funds to institutions, it is important to examine the context of university funding in developing countries in order to understand the constraints imposed on institutions. This section takes as its starting point the basic financial problem confronting universities in most developing countries, namely that rapid expansion has not been accompanied by commensurate funding increases. This imbalance between resources and institutional activities stems from three basic policy restrictions that have prevented institutions from responding in an effective manner. These restrictions are, first access (admissions) policies; second, policies which bar institutions from seeking alternative sources of funds (i.e., how far they are free to charge tuition); and third, limitations on the extent to which institutions may allocate the funds freely as they see fit. This section explains in more detail the types of restrictions imposed, the rationale behind them, and their consequences for higher education.

Rapid Erosion of Resources

The most fundamental change in higher education systems throughout the world has been the attempt to democratize access. Rapidly expanding primary and secondary enrollments, increased demands for skilled labor, and the growing perception of higher education as a path to individual prosperity and a mechanism for achieving social equality, have fueled the pressures to expand coverage. The impact has been dramatic in developing countries over the past 30 years. Between 1960 and 1987, higher education enrollments increased four-fold in low-income countries, ten-fold in lower-middle income countries and nine-fold in upper-middle income countries.[5/]

But the flood of new students has had serious financial implications for which governments were not necessarily prepared. When higher education was reserved for elite groups, governments were able to meet the full cost without much budgetary strain. But the fast paced enrolment growth has not been accompanied by funding growth, particularly during the economically stringent 1980's. Aggregate statistics show that in Latin America, between 1975 and 1985 enrollments grew 370 percent while real public expenditures grew 210 percent. Thus,

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[5/] Source: World Bank data. Income groups are based upon the country listings in the World Development Report.

real public expenditure per student fell 34 percent.[6/] In Africa the story is similar. Between 1970 and 1983, public recurrent expenditure per student in higher education fell 45 percent. This figure has fallen even further in the past seven years.[7/]

Table 2. Real Public Expenditure vs. Enrollment Growth in Higher Education

(1)	(2)	(3)	(4)	(5)	(6)
Region	Years	Real Public Expenditure Growth	Enrollment Growth	Change in Public Expenditure Per Student	GDP Growth / Enrollment Growth 1990-2000
Africa	1970-1983			-45%	-25.5%
Asia	1975-1985	252%	550%	-46%	
EMENA *	1965-c.1982	--	768%		-17.3%
Latin America	1975-1985	210%	370%	-34%	1.9%

Sources: Mingat and Tan 1989; World Bank 1988; Winkler 1990; Za'rour 1988; Unesco and World Bank data.

Column 6 calculated using Unesco enrolment projections, and assumes government spending on higher education as percent of GDP stays constant and uses optimistic GDP growth figures.

* Emena refers to the World Bank regional classification of Europe, the Middle East and Northern Africa, which includes Pakistan.

The financial problem created by combined enrollment increases with restrictions on outside income is almost certain to continue in the near future. Using forecasted GDP growth as an optimistic proxy of higher education budget growth, and enrollment forecasts based on primary and secondary school enrollments, real public expenditures per student would fall another 25.5 percent in Africa by the year 2000, and by 17.3 percent in the Middle East and Northern Africa. In Latin America, per student expenditure would only grow by 1.9 percent.

[6/] Based on data in Winkler 1990 from Argentina, Brazil, Chile, Colombia, Mexico and Venezuela.

[7/] World Bank 1988. Figures are in constant 1983 US dollars.

Box 2: Algeria and Argentina: The Consequences of Weak Policy Environment

In Algeria, institutions must accept all students who pass the baccalaureate exam. Negotiated budgets, strongly influenced by the political standing and influence of the university rector, have fallen well behind enrollment growth. Between 1981 and 1987, enrollments nearly doubled while real budgets grew by only 13 percent. On a per student basis, real resources in 1987 were only 53 percent of those in 1981. At the same time, there has been no evidence of efficiency gains, due to economies of scale or elimination of past waste (Sack 1991).

A more serious situation exists in Argentina. Between 1975 and 1985, enrollment growth in Argentina's universities averaged nine percent per year, while real budgets fell on average by 11 percent. In 1985, public expenditure per student was 22 percent of its 1975 level. In what were once considered some of the best universities in Latin America, quality is reported to have deteriorated significantly.

In both cases, economic deterioration combined with policy weakness (automatic admissions policies and the absence of tuition) has allowed for rapid declines in institutional income, quality and efficiency. Because of the problems created by this weakness, the governments, with increasingly scarce resources, are forced to utilize negotiated funding to allocate the increasingly insufficient funds for universities, given what is expected of them.

The principal cause of this problem has not been the criteria through which governments have transferred funds to institutions, but rather the policy environment within which institutions operate. Automatic admissions policies, whereby all students receiving a secondary degree are entitled to access, combined with the absence of cost recovery or other revenue diversification, and limits on many governments' ability to provide additional funds, and restrictions on how institutions can deploy resources have compounded the problem (Box 2). In other words, government resources simply could not keep pace with the rapid increase in enrollments, nor have institutions been free to change their deployment of resources to cope with new demands or external situations. The rest of this section therefore examines in more detail the framework that has inhibited effective functioning of many university systems, stressing the need to consider these impediments along with reforms in the mechanisms for transferring funds.

Admissions Controls

Perhaps the most destabilizing regulation imposed on higher education institutions is that of admissions requirements. Admissions restrictions take several forms. At one extreme, all students who pass their secondary school exams are able to achieve places in universities. This "automatic" admission policy is common throughout francophone countries utilizing a

baccalaureate exam as an entitlement to university entry. A somewhat different form of control, but which achieves similar disturbances, is that of enrollment targets set by the government that institutions must satisfy. These targets are often negotiated at the time of budgeting, as in Latin America, or simply set out in development plans by governments. A third form of enrollment restriction is government specification of the fields in which students must be accepted. Governments may require institutions to accept many students in areas perceived to be central to economic development, such as engineering and scientific fields. Since these fields tend to be the more costly ones, universities have an additional burden imposed on them.

Enrollment restrictions imposed on institutions by the government stem from both political and economic rationale, but in the end may satisfy neither of these objectives. Automatic admissions satisfy a political goal of ensuring access to higher education. Similarly, high admissions levels have been advocated to further economic development, through the provision of highly trained manpower. When governments channel enrollments into high cost technical fields, it is often the result of a manpower planning policy to increase the industrial capacity of the country.

The consequences of these admission restrictions can be severe. First, they often imply a rapid erosion of funding, since institutions are not allowed to charge tuition fees, and government resources usually do not keep pace with expansion. Institutional resources are quickly diverted away from instructional and research purposes and directed towards accommodating students wherever possible. Second, relatively automatic admissions policies imply a falling standard of entering students which may create new burdens for institutions, such as requiring them to provide remedial courses which will have significant financial consequences. In general, improvements in the incentives for institutions can have little effect if fundamental problems created by access policies are not addressed.

Finance Restrictions.

The principal financial restriction imposed on institutions is limiting their ability to seek outside sources of income, particularly through student fees. Free, or token, tuition is the norm in most developing countries, although during the last decade this has begun to change. When free higher education is combined with automatic admissions policies, the financial consequences can be extremely serious for institutions (Box 2).

In addition to fixed, and low, tuition charges, many governments penalize institutions that seek outside funds. Institutions that engage in profitable links with industry run the risk of having their public budget reduced. In countries such as Japan, Pakistan, Canada or Morocco, when institutions receive external funding, it usually translates into reductions in their public budget.

Governments have justified tuition restrictions on both economic and political grounds. As noted in Section 1, subsidized higher education began in order to provide sufficient manpower for industrialization. Low tuition was seen as necessary means to expand enrollments. On the other hand, free higher education also satisfied a political agenda to guarantee access for as many people as possible.[8/]

Internal Allocations

A third category of government restriction relates to limitations on the freedom of institutions to spend their money as they see fit. At one extreme, some systems are very liberal in this regard; institutions receive block grants which they can spend as they wish. At the other extreme, each expenditure item must be approved, all staff members are considered civil servants, and fixed staffing arrangements and patterns are delineated by the government. Such restrictions are usually justified as a means of ensuring accountability from institutions; for instance, prescribed staffing patterns are supposed to ensure quality control.

These restrictions have two important, but harmful, consequences. First, institutions are prevented from seeking greater efficiency, since they cannot redeploy their resources to achieve efficiency gains. While having to maintain staffing ratios, institutions then may lack money to update their libraries. Second, institutions become extremely slow to respond to changing external demands, since government approval must be sought to redeploy resources from one program to another. As external environments change, institutions need both the capacity (freedom) as well as incentives to respond and adapt.

[8/] Repeatedly, studies have shown that free tuition is a poor (and extremely costly) path to equity, since children of wealthier parents are far more likely to benefit from the subsidies than are poorer ones.

Table 3. Degree of Government Control in Higher Education Systems (Context within which allocations decisions are made)

COUNTRY	ACCESS government control over institutional enrollments	FINANCE institutional dependence on government for finance	INTERNAL ALLOCATIONS government control over internal budgeting	BUDGETING MECHANISM
Negotiated Basis				
Morocco	High	High	High	Negotiated
Algeria	High	High	High	Negotiated
Argentina	High	High	Medium	Incremental
Honduras	High	High	Medium	Fixed % of Budget
Kenya	Medium	High	High	Negotiated
Sudan	Medium	High	High	Negotiated
Brazil	Medium	High	Medium	Incremental
India	Medium	Medium	High	Incremental
Philippines	Medium	Medium	Medium	Incremental
Input Based				
France	High	High	Medium	Formula
Sweden	Medium	High	High	Line Budgeting
Nigeria	Medium	High	Medium	Line Budgeting/Formula
Norway	Medium	High	Medium	Line Budgeting
China	Medium	High	Medium	Formula
Indonesia	Medium	Medium	Medium	Formula
Japan	Medium	Low	Medium	Formula
Ontario, Canada	Low	Medium	Low	Formula
UK	Low	Medium	Low	Competitive Bidding
South Africa	Medium	Low	Low	Formula (Throughput)
Japan (private)	Low	Low	Low	Formula (Throughput)
Performance Based				
Finland	Medium	High	Medium	Cost per Graduate
The Netherlands	High	High	Low	Cost per Graduate
Denmark	Medium	High	Medium	Cost per Graduate
Israel	Medium	Low	Medium	Cost per Graduate
Student Based				Voucher-Like Funds and
Chile	Medium	Low	Low	Scholarships and Loans

Definitional Notes:

Access: High degree of government control implies that the government has established an automatic admissions policy, obliging institutions to accept all applicants with minimum qualifications.
Medium control implies numbers are set by government, but actual selection is done by institutions.
Low control implies that institutions can set numbers and select applicants.

Finance: High degree of government control implies that institutions depend on public funds for over 90 percent of their operating budget. Medium control implies some diversification of funding, such as moderate cost recovery. Low control implies that governments provide less than 70 percent of institutional funding.

Internal Allocations: High degree of government control implies that government approval is required for staffing and non-staffing expenditures. Medium control implies that institutions have some discretion -- e.g. over non staffing expenditures. Low control implies that institutions have full internal budgeting autonomy.

Government Restrictions in Practice

Table 3 illustrates the extent of the problem of government control over higher education systems, as well as pointing to the relationship between the policy environment and funding mechanism options. The table compares the extent of government control in 25 higher education

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systems with the funding mechanism in place. Rough approximations of the degree of control (high, medium or low) are given on the basis of criteria listed in the explanatory note. Each of the classifications admittedly masks complexities inherent in each system. The higher education systems are grouped according to the basic allocation method -- negotiated budgets, funding on the basis of inputs or outputs and student based funding. Within these categories, the systems are arranged in descending order of the extent of government control.

Several important patterns are apparent from the table. First, and perhaps most importantly, developing country higher education systems tend to be more severely restricted than those of industrial countries, particularly with regard to enrollment decision making. The sample here is biased since developing country systems are deliberately under-represented in this table so that we can examine other funding techniques. The number of highly restricted higher education systems utilizing negotiated funding would significantly increase with the addition of more developing countries to the list. A second point emerging from the table is that the most highly restricted systems tend also to have negotiated budgeting. Government control is strongest through negotiated budgets. Third, lower financial dependency correlates with lower control over enrollments and internal allocation of resources (although the converse is less true); therefore, financial diversification may be an important measure to promote institutional autonomy. Fourth, input, output and student funded systems tend to have much fewer enrollment and internal allocation restrictions. Improvements in funding mechanisms alone will not be compatible with the current environment within which institutions operate.

An important message illustrated by the table is that the institutions with the fewest regulatory restrictions, such as in the UK, Chile Japan's private institutions, and Israel, tend to be funded using efficiency measures of some sort: either output funding, voucher funding, or throughput measures. Accountability is achieved through the funding mechanism rather than fixed bureaucratic regulations, therefore establishing a more flexible framework for the higher education system. An equally important message is that improved policies with regard to admissions procedures, diversification of funding, and the ability to redeploy resources will be needed to improve higher education performance.

Autonomy vs. Accountability

Given the problems that institutions face, why are restrictions still in place? University autonomy is widely regarded as a necessary ingredient for success. Autonomy applies not only to freedom of expression, but control over admissions and hiring polices, deployment of resources, decisions on types of activities to engage in. But governments are increasingly unwilling to give a blank check to universities to do as they wish. The traditional view that higher education institutions need not justify their activities to government or society at large developed at a time when very limited portions of public budgets were spent on these institutions. With the increasing demands of institutions, that position is no longer tenable. The argument runs along the following lines. Autonomy is both a privilege and a responsibility given

to academic communities. Therefore any institution using public funds has an obligation to show how those funds are used. The issue is not one of avoiding corruption. Rather, it is the clear enunciation of academic, research and other goals, and an accounting of how and under what conditions and costs such goals have been met. Therefore, governments need to establish a counterbalance to the vocal strengths of the higher education interest groups, especially in its analytical skills, to review and evaluate the performance of an institution it is funding.

By simply loosening the restrictions on institutions, governments could lose their ability to ensure that resources were being used effectively. So while adopting a proper policy environment for higher education systems is essential, so too is a means for funding institutions so as to preserve accountability. Through changes in funding mechanisms and criteria, governments have explored various avenues that allow institutions to have autonomy over all decision making, but yet ensure accountability over the use of public funds.

The remainder of this paper will examine ways in which the government can step back from controlling institutions and still encourage better performance. First, we shall turn to the way funding is conducted in the presence of a distorted policy environment for institutions. The remaining sections will examines alternative funding approaches which rely on a proper "funding mechanism" to combine institutional autonomy and accountability to ensure adequate performance.

3. Negotiated Budgets

The majority of governments in the developing world do not transfer funds to universities using criteria that are related to the internal workings of those institutions. In the majority of cases where criteria that objectively relate to the institutions themselves are lacking, we broadly refer to negotiated allocations procedures. Within this category of funding, decision making does not depend on specific institutional characteristics (such as the number of students enrolled), but much more so on political relationships between actors.

As Table 1 showed, negotiated funding is pervasive in the developing world, and indeed still occurs in several wealthier countries, such as Greece and Italy. The reason for political based funding stems more generally from the manner in which governments as a whole make funding decisions. Negotiated budgeting, is often the result of political relations that are dominant in the culture and that developed in countries after their independence from colonial administrations. In many instances, even if countries were to circumvent this tradition, weak institutional capacity and the lack of sufficient information with regard to institutional activity would limit the ability to move towards a different funding system (Kells 1991).

Almost all of the countries that rely on negotiated budgets also impose the highest levels of constraint on their institutions. These institutions have little autonomy to control enrollments, to allocate funds internally or to seek additional funding from private sources. In our sample, almost none of the higher education systems with negotiated budgets were allowed access to student tuition income. Similarly, institutions were almost always forced to absorb rapid enrollment increases, and often in expensive fields. The institutions had little capacity to redeploy their resources to accommodate these changes.

Types of Negotiated Funding

The fundamental characteristic shared by negotiated funding approaches is that the level of funding bears little relationship to the activities conducted by the institutions. Changes in activities, such as enrollment increases, do not necessarily translate into funding increases, for example, nor do funding increases necessarily imply taking on new activities. Among the negotiated systems, a distinction may be drawn between incremental budgeting, fixed revenue agreements, and ad-hoc negotiating. All of these methods allow the government to maintain a great degree of power over institutions. Although institutions with somewhat more autonomy tend to be funded through a fixed revenue agreement in which each receives a share of the overall funding resources.

Incremental budgeting: A common and pernicious practice in developing countries is for institutions to receive a flat increment on their previous budget. Incremental budgeting allows governments to treat institutions "equitably" in the sense that all institutions receive the same proportional increment. But such allocations fail to relate to the activities that the institutions actually conduct. Increments do not usually bear any relationship to cost changes (due to inflation or factor price rises) or to changes in the nature of a university's activities (such as new programs or more students). Incremental budgeting has been common in Latin America (Winkler 1990), in South Asia (Mridula 1985, Bellew and DeStephano 1991) and in Africa (Eisemon 1991).

Frequently, incremental budgeting has been employed deliberately to reduce real government spending on higher education, by allowing inflation to erode university budgets; some African governments, for example, achieve budget cuts in this way (Eisemon 1991). When this practice is combined with mandatory enrollment increases, per student operating budgets are quickly eroded.

Ad-hoc Negotiations: An alternative approach is to allocate budgets on the basis of bilateral negotiations between university representatives and the appropriate government ministry or funding body. The principal factor in allocating funds is the political skill of the negotiators. While negotiation occurs to some extent in practically all systems, it lies at the heart of budget practices in many francophone and anglophone African countries. In Kenya, for example, universities must petition the president to receive funds throughout their operating year. Even in countries where formal allocation guidelines exist, such as Nigeria, in practice, negotiation can be the paramount factor in determining budgets.

Box 3: Funding India's Universities

India provides an interesting example of several nuances of negotiated funding. All institutions of higher education receive their funds from State or Central governments (or their agencies) through the system of block grants and maintenance grants-in-aid. Roughly one third of public support comes from the federal government and two-thirds from state governments. Federal funding is targeted mostly to research, priority programs and annual adjustments to staff salaries (Sharma and Sanyal 1990). For the majority of institutions, basic operating grants come through the state governments, each with its own funding approach. Although grants are called block grants, the restrictions on allowable expenditures and staffing policies undermine financial autonomy. Few allocation decisions are made on the basis of individual institutional characteristics.

Mridula (1985) has distinguished three categories of budgeting. (i) Budgets which are calculated from the operating deficit of an institution. The method of calculating what portion of the deficit will be funded varies from state to state, and it allows for a considerable amount of political decision making. In most cases, the state government calculates the deficit by subtracting expenditures for approved items, from the total income of an institution. None of the states apply a uniform list of admissible expenditures. (ii) Incremental budgets, ranging between one and five percent annually for surveyed institutions. In some cases the increment is given annually, while in others, it is given after three to six years. And (iii) purely ad-hoc budgets: grants simply fluctuate with available state resources each year. Mridula's survey of some 55 universities revealed that 26 received their grants on a deficit basis, 16 on an incremental basis and 12 on a completely ad-hoc basis.

Fixed revenue agreements: Some governments reach agreements with institutions to allocate a fixed percentage of their total revenue to institutions. In Honduras, for example, the government allocates six percent of total expenditures to the National University. In Sao Paolo, the state government guarantees the University of Sao Paolo eight percent of total government expenditure. A similar approach is an earmarked tax, in which the government diverts a fixed percentage of revenue from a given (often non-related) source to higher education. In Jordan, for example, the universities are funded on the basis of a fixed percentage of revenue generated from a stamp tax. These agreements are included under negotiated funding agreements because on the one hand, they bear no relation to the activities of the institution, and secondly, they are usually subject to revision. The university in Honduras raised its allocation from two to six percent of the budget, for example, without any expected change in activities.

Consequences of Negotiated Funding

Negotiated funding, in general, has not been an effective mechanism for allocating higher education resources. The principal failures stem from: uncertainties regarding future funding, especially in relation to enrollments; lack of incentives for efficiency; absence of any clear signals or ability to respond to external demands.

In environments where policy distortions are not creating huge financial burdens, i.e. institutions can limit their enrollments, such funding techniques may provide a relatively stable source of funding to universities. In highly distorted environments, they become a means to avoid confronting the problem of rapid expansion without resources. The government has to allocate resources which are insufficient to meet the demands placed on the system.

A principal shortcoming of negotiated funding, however, is that it provides no incentives for efficiency. If an institution receives a flat increment on its previous budget, or if it simply negotiates a budget with the government, the resulting funding bears little relationship to the activities expected of the institution. The funds are transferred and the activities (teaching and research) are determined after, not before the allocation of funding. That is, since funding is unaffected by whether institutions behave efficiently or not, it is tempting for them to be inefficient.

In Brazil, for example, between 1983 and 1988, federal university budgets remained fairly constant while enrollments fell by seven percent. The Brazilian universities were allowed a high degree of control over their enrollments, thus allowing them to adjust admissions in line with their funding each year. There is no indication that extra funding has been used for quality investments. Student-teacher ratios have been maintained at approximately eight to one, a level that is low by international standards. Furthermore, a significant part of the non-salary budget provides highly subsidized meals, health services and other welfare services. A similar problem exists in Honduras where the public university's budget is constitutionally guaranteed at six percent of total public expenditure. There are, however, no fixed requirements on what the institution is expected to provide for that money since this funding level bears no clear relationship to the characteristics of activities at the institution (Box 4).

Box 4: Honduras: Funding in a One-University System

Many countries with less developed higher education systems have only one public university. Developing funding methods to allocate among institutions therefore is not applicable, but it remains necessary for the government to formulate criteria to determine funding to the one institution.

Honduras provides an example of a mono-institutional system. The National Autonomous University of Honduras (UNAH) is the single government run university. Currently, there is a constitutional requirement for UNAH to receive six percent of all government expenditures in a given year, although UNAH must guarantee admission to all students completing secondary school.

Generous funding, however, has not led to a high quality university. UNAH offers training in courses that are increasingly divergent from the demands of students and the labor market. Excessive numbers of administrative personnel, absorbing a high percentage of the budget, are seen as a major factor hampering any internal reform. Indeed, administrative costs represent nearly 50 percent of the university's annual expenditures, while spending on books was less than one tenth of one percent of the budget in 1990. As a consequence, expensive private universities have appeared in the last few years, catering mostly to wealthy students who wish to opt out of the low quality public system.

Even in times of funding shortages, negotiated funding may provide disincentives for efficiency. While institutions are starved for funds, many continue to utilize their limited resources extremely poorly. One particularly evident problem is the excessive number of administrative and teaching staffs in many universities. In anglophone Africa, for instance, student teacher ratios average seven to one, and are thirteen to one in francophone Africa. By way of comparison, these ratios are 13 to 1 and 25 to 1 in British and French universities, respectively. In addition, African universities tend to hire large numbers of non-academic staff. In Ghana, there are about six students for each member of non-academic staff (World Bank 1988).

The tendency to deploy staff inefficiently occurs because many governments implicitly may view their institutions as places to satisfy political patronage through employment generation. If any institution were to eliminate staff (to increase spending in other areas), it would, in all probability, place itself in a poorer position to negotiate its next budget; governments may regard staff salaries as having a first call on budgets (and employees are likely to have vocal unions) whereas purchase of equipment and library books can more easily be put off for a year. Thus there is often an implicit incentive for institutions to preserve even unnecessary staff, to maintain future budget levels.

Negotiated funding has not enabled institutions to be adaptive to labor market or student demands. Neither negotiation nor incremental budgeting sends clear signals to institutions about these demands. In general, there are no mechanisms in place to ensure that courses which universities offer provide students with skills that are needed by employers. Growing rates of graduate unemployment (and underemployment) is a symptom of the problem. Besides the lack of clear signaling, institutions may be constrained further because ad-hocism is usually combined with tight government restrictions on expenditures. Autonomy to redeploy resources, as well as an incentive mechanism to encourage institutions to do so, are essential for responsiveness to the labor market.

Conclusions

While negotiated funding has been the dominant form of funding of universities in the developing world, it has not served higher education well. Many of the problems stem not from the funding approach per se, but also from restrictions on institutional ability to control enrollments, to seek additional funds to supplement declining government income, and to redeploy resources to be efficient and responsive to changing external demands. Nevertheless, ad-hocery has compounded these restrictions through year to year uncertainties with regard to government budgets, and negative incentives that may penalize efficiency. The challenge for many developing countries will be to design a means to improve the broader policy context within which institutions operate, and at the same time, to develop new funding strategies that will allow governments to ensure accountability over the use of their funds.

The next four sections explore means adopted in both developing and industrial countries to achieve this twin balance between greater latitude for institutional decision making and accountability to funders for performance. The following section will examine the experience with utilizing a different institution to handle funding decisions, namely the use of a buffer funding organization that stands between the government and the universities. The following sections will examine the role of funding on the basis of economic criteria -- either on the basis of inputs or outputs from the university. Finally, the alternative of providing funding via students instead of directly to institutions will be examined.

4. The Role of Buffer Organizations

Many developing and industrial countries have utilized a somewhat different institutional arrangement in an attempt to increase institutional autonomy while preserving accountability. These governments have introduced a buffer funding body that stands between the government and the universities to handle funding decisions, and to insulate institutions from direct political interventions. The classic model for a buffer is Britain's, recently defunct, University Grants Committee (Box 5). Similar institutions exist in many British commonwealth countries. Buffers are also common as research funding bodies -- research councils -- where experts allocate funds on the basis of project merit.

This discussion focusses on buffers for core operational funding, and asks to what extent buffer institutions have furthered the objectives of stable, efficient and responsive institutions. We find that in some instances buffer organizations can play an important role in resource allocation, yet the effectiveness of these buffers has varied widely.

The University Grants Committee in England was never charged with statutory powers, and therefore was always subject to disbanding by the government (as it actually was in 1988). Most of the similar bodies in other countries, however, do have a legal status that defines theoretical powers and responsibilities. India's University Grants Committee, for instance, has had its powers legally redefined (expanded) several times since its original inception.

The membership of buffer bodies usually contains university officials who agree to evaluate university needs. In addition, government representation has been present. England's new University Funding Council includes representatives from industry to participate in funding decisions.

Box 5: UK: Funding through the University Grants Committee

The University Grants Committee (UGC) was established in 1919 as a non-statutory body to recommend to the government the overall funding needs of the universities and to allocate the overall budget to each institution. It served as a buffer between the government's agendas and the autonomous Universities. During the 1960's the government embarked on a deliberate program of university expansion. To oversee this expansion, the UGC began allocating funds using a funding formula.

The exact UGC formula was always concealed from institutions. However, in order to create stability, the funding body guaranteed minimum resources over five year periods. The UGC transferred "block grants" to institutions which contained unspecified components for both teaching and research. Institutions were free to allocate funds as they wished (Shattock and Rigby 1983).

The approach was regarded as successful, as long as resources were plentiful (until the late 1970's). Expansion proceeded in a rapid, but controlled manner, and the quality of institutions was maintained. Hiding the formula from institutions proved to be one of the system's strengths, since it provided the UGC with a certain degree of flexibility. The program began to unravel, however, when the macro-economic situation required public spending retrenchments, and thus led to the collapse of the guaranteed five year plan of funds. The power of the UGC, however, allowed it to preside over funding cuts that also led to enrollment cuts and elimination of inefficient programs. That is, rather than eroding the amount the UGC gave to each institution, the UGC required institutions to reduce their student intake, and thereby preserve per student resources.

Rationale and Functions

Based on an examination of the charters of buffer organizations, four principal rationale for their operation can be identified. First, buffers consist of a group of technical experts (usually university officials) that are expected to evaluate university financial needs, present a budget request to the government and allocate funds to individual institutions. Second, buffers are supposed to insulate institutions from direct political intervention; buffers are to provide autonomy, while preserving accountability to the government. Thirdly, buffers sometimes act as a quality control mechanism, to maintain standards throughout the higher education system. And finally, some buffers serve to decide on institutional enrollments and their distribution by field and degree level.

Table 4. Actual Functions of Buffer Funding Bodies: Selected Countries

Country (Organization)	Core Budget Allocations	Preserving Autonomy	Quality Control	Enrollment Determination	Funding Mechanism
UK (UGC)	x	x	x		Input
Nigeria (NUC)	x		x		Non-cost
Israel (PGC)	x		x		Output
New Zealand (UGC)	x	x	x		Input
India (UGC)			x		Ad-hoc
Pakistan (UGC)			x	x	Ad-hoc
Kenya (CHE)			x		Ad-hoc
Sudan (UGC)				x	Ad-hoc

Sources: Shattock and Rigby 1983; Singh 1984; Bellew and Destaphano 1991; Zadok 1985; Eisemon 1991; Eisemon 1984.

The actual functions that many developing country buffers have performed, however, has diverged significantly from the rationale for their introduction. Table 4 lists principal functions that eight buffer bodies actually perform, dividing tasks into four central areas: allocation of resources, preserving autonomy, quality control and enrollment determination.

Financial role. While almost all buffers are nominally charged with the allocation of resources to universities, many do not control funding. In India, the UGC funds certain "thrust" areas of science and technology, particularly for post graduate training and research. But these areas are often determined by the government itself (Sharma and Sanyal 1990). In Kenya, Pakistan and the Sudan, while the buffer is supposed to handle funding decisions, the institutions are too weak to do so. The universities bypass the buffers and negotiate their budgets directly with the ministries of education or finance. In Kenya, universities approach the President three times each year to receive their funding.

Autonomy. Preserving institutional autonomy has been extremely important function of the buffer bodies in the UK and New Zealand. In these countries, the high quality of instruction and research has been partially attributed to the relative absence of government intervention. While preserving autonomy is, in theory, an important function for buffers, they have often failed to do so for one of two reasons. First, institutions may be too weak, and therefore the government overrides any decisions it makes (Kenya, Pakistan, India, Sudan), or the institutions actually become excessively strong, and wield regulatory powers over institutions. This problem has been noted in Israel (Iram 1990; Zadok 1985) and in Nigeria.

The Nigerian buffer, the National Universities Commission (NUC), is a somewhat special case. Its authority grew tremendously during the mid-1980's when the government gave it true power to allocate budgets to institutions. But the government did so only when it was severely short of funding to maintain its well-developed higher education system. The NUC has been used to diffuse tensions and essentially has been left to deal with a problem the government preferred not to deal with directly: namely, how to allocate the limited funds which are far

below what the institutions actually need. Thus, while buffers often serve to insulate universities from government interference, equally they can buffer the government from university protests.

Quality control. Most of the buffers also serve as quality control organizations, periodically inspecting institutions to ensure that standards do not fall. This function has become the primary role of India's UGC, but has also been taken on by the PGC in Israel and to some extent by the UGC in the UK. Quality control in some instances has perhaps led to regulation of institutions, by setting target student teacher ratios, for example. The most common form of quality control is for the buffer body to serve as an accreditation institution, approving new institutions, or programs within existing institutions.

Enrollment determination. A further function is for buffer institutions to determine enrollments at institutions. This is usually done to counteract institutional tendencies to lower their enrollments in light of funding shortages. Sudan's UGC and, to some extent, Pakistan's, have taken on as a primary function controlling the intake and distribution of enrollments at public universities. Besides setting overall enrollment numbers for institutions, some organizations determine field distribution within universities, and therefore act as a "manpower planning" body by relating enrollment numbers and distributions to development objectives.

Funding criteria. If one looks at the impact of buffers on the types of funding mechanisms, one sees that the strong buffers, which actually allocate operating budgets to universities, have relied on input or output funding techniques. The notable exception is Nigeria. Despite the existence of cost-parameters for allocating funding, the NUC has been forced into a more haphazard approach since its hands are tied because it has fewer funds than would be warranted by an economic analysis of all Nigeria's institutions. Among the buffers that do not actually allocate funding, budgets are essentially allocated on the basis of negotiation, usually with a ministry of finance or education. The governments simply are not willing to yield direct control over funding to an autonomous body.

Limits on Effectiveness

The diverse experience with buffer organizations reveals a somewhat logical flaw. Is it really possible to have an organization that remains independent of universities and government, when the buffer's powers are always determined by the government? Is it feasible to expect the government to yield funding power to a third party?

While buffer organizations can work well in certain political climates, they are never truly buffers because they are always much more dependent on the government than the universities. If a government strongly disagrees with buffer policies, then it has the authority to disband the buffer. Alternatively, governments can leave the buffer body intact, but render it impotent, leaving real decision making to higher level government officials.

The recent events in the UK and Australia reveal situations where buffers are likely and unlikely to work effectively. Buffers function well in instances where the government prefers to rely on a panel of university experts, rather than bureaucrats, to make decisions. In both countries, when higher education systems were small and resources were plentiful, the government delegated considerable authority to their buffers. Buffers presided over a rapid increase in public expenditure to higher education. The rationale was to rely on "experts" to determine how those extra funds could best be utilized. But as the systems grew, the amounts of money became larger, and economic conditions deteriorated, the two governments called for increasing accountability over funds. As a result, government agendas for higher education diverged from those of the buffer organizations, and their powers were gradually withdrawn until both were replaced (Marshall 1990)[2/].

In contrast, buffer (or similar type) organizations are sometimes used to execute budget cuts. In both Nigeria and the Netherlands, when the government had to reduce spending to the sector, decision making was transferred to a panel of university experts rather than remaining with the government. Buffers, therefore, enable to governments to transfer decision making away from bureaucrats to experts, usually in instances where the government is either unequipped or unwilling to make certain budgetary decisions.

In many developing countries, while buffers exist in name, they are often rendered impotent because governments simply do not want to let go of real authority. The quality control function often remains intact, however, because this is truly an area where governments do need to rely on help from experts.

The experience with buffer funding bodies demonstrates that in some instances they can be a mechanism to promote university autonomy, as well as funding that is allocated on more institutional rather than political criteria. But their existence is not a guarantee that this will happen. Nor are strong buffers immune to politics either from the universities or governments. When the buffer institutions are strong they can sometimes exercise excessive control over institutions, and simply interfere in the same way that a government would. Both Nigerian and Israeli university administrators accuse their funding bodies of being somewhat dictatorial (Zadok 1985).

[2/] In general, the complexity of funding universities, the large amounts of funds involved, and the generally strong political standing of the parties involved, often create a need for a panel of experts to be involved in the allocation process. An illustration of this need is what happens when a void is created by the elimination of the buffer. When the UK government replaced the UGC with a more closely held state funding organization (UFC), the Council of Vice-Chancellors and Principals (CVCP) which consists of the heads of the universities, increased considerably in stature.

The next three sections focus, in more detail, on the criteria governments have utilized to transfer funds to institutions. These chapters focus on funding mechanisms that address the inputs and outputs of universities, and thus seek to twin accountability with more institutional autonomy. A third section will focus on transfers via students. We begin with input funding.

5. Input Funding

In response to the problems described in the previous sections, more countries, including those with limited institutional infrastructures, have shifted towards cost-based funding mechanisms. In most industrial countries and some developing countries in Asia and Africa, funding is allocated on the basis of estimates of costs for educational inputs. Such input funding requires that governments have a means to identify costs, and to distinguish the costs at one institution and one program from another. The methodology used to calculate costs has an important impact on institutional incentives.

The more freedom that governments give to institutions to spend their money, the more general is the input funding technique. Conversely, the more control governments exert over institutional expenditures, the more particular is the funding mechanism. Table 5 illustrates three broad approaches to isolating input costs, roughly corresponding to three mechanisms for funding. The first is to break costs down by types of expenditures (i.e. salaries, equipment, physical facilities, student services, etc.). This approach corresponds to line item budgeting of expenditure categories. A second approach, disaggregates budgets for cost centers -- this is usually done for an individual faculty, or in some instances, an individual professor. This corresponds to program budgeting. A third approach disaggregates cost by activity -- e.g. instruction and research. When costs are broken up in this way, allocations are usually made on the basis of formulas, particularly for instruction.

Table 5. Types of Cost and Input Funding Mechanisms: Moving from Higher to Lower Constraints on Institutional Spending

Cost Breakdown / Budgeting Process (How cost is determined)	
Expenditure category	Line item review
Cost centers	Program budgeting
Activities (teaching, research)	Formulas

Institutions with relatively low government constraints receive funds on the basis of formulas. The lowest control systems have input mechanisms that are oriented so that institutions seek lower unit costs, as in South Africa and Japan's private institutions.

Encouraging institutions to seek efficiency gains, however, requires that they be permitted to redeploy resources. Experience with these input systems is described below.

Types of Input Funding

Line item budgeting: Many governments require institutions to have each expenditure item approved. Institutions typically submit budgets for forthcoming years to the ministry of education, and expenditure items are examined on an individual basis, but usually include cost parameters to assess them. Until recently, budgeting in Norway and Sweden occurred in this way. Expenditure approval corresponds to cost analysis of expenditure categories. During the 1970's, the Swedish Ministry of Education would set enrollments in each department of universities, and allocate budgets according to permitted expenditures in each faculty.

In a few developing countries, budgets are approved on the basis of cost parameters. Cost parameters are used to specify rules to govern line item funding decisions. These include such specifications as student teacher ratios, staff student ratios, space allocations. In Nigeria, allocations to federal universities are made by the National Universities Commission (NUC). The NUC (in theory) determines a recurrent budget in three cost areas: direct teaching, non-teaching academic and administrative support. To determine the direct teaching budget, the NUC uses student teacher ratios by field of study (which have remained fixed since 1977), including guidelines for senior and junior staff, and technical and senior administrative staff, related to enrollment. Non-teaching academic expenditures are calculated as a percent of the direct teaching expenditures. The library budget, for instance, is calculated as five percent of total university expenditure. For administrative support and student service expenditures, there is a distinction made between old and new universities. The old universities receive 15 percent of the support salaries, while the newer ones receive a fixed amount per student.

Program budgeting: Many countries that formerly practiced line item budgeting, have begun to increase institutional autonomy by allocating block grants to cost centers. During the 1960's, many US state higher education systems replaced line item review with Program Plan Budgeting Systems (PPBS); instead of allocating funds by cost categories such as academic salaries, funds are allocated to cost centers (faculties). In Germany, budgets are given for individual professors; in this way, cost centers could be differentiated to recognize the higher costs found in some scientific fields compared with arts and social sciences. The Scandinavian countries have moved towards cost-center based financing to allow institutions more flexibility in allocating their own budgets.

Formula budgeting: This approach derives budgets from formulas using institutional characteristics, such as enrollments or staffing patterns. Instead of institutions submitting budgets to a government ministry for approval, the funding agency allocates resources on the basis of the costs of activities -- typically instruction and research. The most common approach is to multiply enrollments by a parameter of unit cost (often referred to as the unit resource). While

this may be combined with other forms of budgeting (separate allocations for research, negotiated budgets for outside activities, historical allocations), enrollment formulas have been widely used throughout North America, Europe and Asia.

There have been two broad categories of formulas. One is an enrollment formula, in which governments agree to provide funds to an institution in proportion to the number of students enrolled. A second type of formula, which is often an enrollment formula in disguise, multiplies a cost coefficient by the number of staff.

Formulas assign weightings according to the field, type of program or type of institution. The actual weightings used, as well as the unit measured, send powerful signals to institutions. Enrollment formulas, for example, often give institutions a clear incentive to expand enrollments, while staff formulas, as in Mexico, may encourage a rapid increase in staff numbers.

The weightings (or coefficients) used in formulas provide incentives for internal distribution of resources. The most common weightings are for field of study, level of education, type of institution (location, size, and mission within the system), and type of students. In principle, weightings should reflect differential costs, i.e., that an engineering course might cost three times an arts course. Weightings can, however, be employed as an indirect form of government control over enrollment patterns; if a government wished to increase the supply of engineering places, it could raise the weighting given to engineering enrollments.

Box 6: Funding Formulas and Weightings in Ontario

Beginning in 1967, the Ministry of Colleges and Universities (MCU) implemented an enrollment formula to promote controlled, cost efficient, and equitable expansion of its university system (Darling, et al 1989). The MCU stated that the following eight categories of weightings that were used resulted from a detailed cost analysis conducted at the University of Ontario.

Weight 1: General arts and science, and other three-year programs.
Weight 1.5: Upper year honors arts, second-entry professional, Fine Arts, Physical and Occupational therapy.
Weight 2: Upper years' science programs, direct entry professional.
Weight 4: Medicine, Dentistry, Veterinary Medicine.
Weight 2: Masters' in Administration, Social Work, Journalism.
Weight 3: Masters' in Humanities and Social Sciences.
Weight 4: Masters' in Life Sciences, Applied Sciences, and Professional disciplines.
Weight 6: All doctoral enrollments.

There appears to be some dissonance between the weights used and costs: unit costs are unlikely to be the same for all doctoral programs and the weighting of six for a doctoral program seems excessive in relation to undergraduate programs. The government used the formula as a deliberate tool to encourage rapid expansion of post-graduate programs.

While the formula gave institutions a powerful incentive to expand, the government did not have resources to keep pace with the expansion. The government therefore reduced the amount it paid per student each year, to keep its overall higher education budget constant. Even at the expense of quality, many universities expanded with less funding, in order to retain their share of the total pie of resources. To limit these incentives, the government has introduced lower payments of only 50 percent of average costs (subsequently lowered to 25 percent) for expanded enrollments.

To limit the incentive for expansion contained in enrollment formulas, some formulas include lower payments for additional students, and thus index funding for enrollment changes. Ontario, like many of the US state institutions, has introduced a marginal cost formula to promote efficient expansion (Box 6).

Throughput adjustments for efficiency can be used to ensure that resources are used more efficiently. In Japan, government support for private institutions is initially calculated on the basis of inputs (enrollments) and adjusted in the light of how institutions actually use their funding. The adjustments can reduce allocations by up to 50 percent or increase them by up to

30 percent based on each institution's conformity to four throughput norms. These are: the ratio of actual students enrolled to the number suggested by ministry; student teacher ratios for each faculty; the ratio of non-salary educational expenditures to student derived revenue (rewarding higher the expenditure and lower the charges); and the overall budgetary balance.

An Input Funding Alternative: The Market Determines its Own Costs

All the above input funding techniques require that the government establish cost norms or guidelines to establish what it will pay to universities. There is no objective criteria for establishing what cost should be. An alternative method for establishing costs is to let the higher education system itself establish costs -- by introducing market oriented competition. That is, rather than establish costs from outside, institutions could be encouraged to seek the most efficient provision of services by having to compete for funds. Such a system has recently been tried in the UK (Box 7). The funding mechanism which replaced the old funding formula, requires institutions to bid for funds -- that is, set a price for which it would teach a specified number of students. The government accepts the lowest price bids, adjusted for quality evaluations.

The theoretical advantages of this approach are that it should encourage institutions to seek comparative advantages of efficiency and quality, and move into or expand areas in which it can provide education more effectively, while abandoning those areas in which it cannot. In addition, rather than imposing more rigid standards of cost that apply equally to institutions over time, it should allow the funding system to be more flexible.

Box 7: UK: Competitive bidding.

In 1989, the University Funding Council (UFC) adopted a "market" based funding system. The objective was to introduce elements of price signals and competition to determine resource allocation, thereby leading to a more efficient allocation of resources. In order to achieve this goal, the UFC required all universities to submit "bids" for each program area. The UFC adjusted the bids according to quality evaluations by program, and accepted the lowest bids only. The bidding process has been seen as a mechanism to pressure institutions to reduce unit costs for teaching by encouraging them to take on extra students at marginal costs. Institutions submit a price per student in a given program at which they are willing to take on students. In addition to this direct institutional funding, public support is channeled indirectly to pay what are notionally called "tuition fees". Virtually all British students have their fees paid through their local governments. The fees act as a voucher, providing institutions with funding per student on the current rather than the previous year's enrollment. This channel of funding has been increased over the last two years.

The university bidding process, as it was initially conceived, was abandoned because institutions entered into a cartel arrangement and rigged prices. The funding approach required that institutions start with a zero budget, and receive public support for instruction only through successful bids. Due to the uncertainty this created for future income, all the institutions submitted their "bids" at the highest possible prices (as stipulated by the UFC).

A similar, but more successful strategy, was adopted by the Polytechnics and Colleges Funding Council (PCFC). This approach maintains the bidding process, but only for marginal funds. The PCFC guarantees institutions 95 percent of their previous year's funds, while requiring them to bid for the remaining five percent pool of funds (increased to 10 percent this year). While changes are only occurring at the margin, it has been sufficient to produce efficiency gains, without causing huge institutional uncertainty. Institutions are expanding programs with excess capacity, and where they have a comparative advantage. Although this process has been more successful, there is no indication of when it will stop. Efficiency gains must have a limit, and therefore this funding approach cannot be a long term strategy.

Consequences of Input Funding

Input funding essentially establishes a contract between governments and institutions, to provide resources in relation to input costs. Funding should therefore be relatively stable, as long as the prices of inputs do not change. As a result, input funding has generally been more successful at providing stable funding than negotiated approaches. But like ad-hoc negotiations,

it has worked less well during austerity when governments are forced to adjust their formulas to ensure that their overall budget stays within its available resources.

Governments can often undermine the stability of funding by adjusting formulas each year to suit their own budgets. Ontario provides an example. The government revises the unit resource it pays to institutions annually, in order to contain total expenditures. While the coefficients in the formula remain the same, the government kept changing the amount it paid per student. The unit of resource declined by 20 percent over a seven year period. Many institutions expanded beyond their capacity just to maintain their share of the budget, and quality declined (Darling et al 1989). Thus, two important points emerge: first, there is a limit to efficiency gains beyond which quality suffers. Second, although there may be excess capacity in institutions, enrollment formulas are often too rigid to allow distinction between efficient and inefficient institutions and programs.

Box 8: Nigeria: Macro-economic difficulties undermining input funding

In Nigeria, fiscal stringency has turned an allocation system that is formally input based into one of ad-hoc negotiation. Repeatedly, during the 1980's, the government has failed to provide the expected resources for federal universities as determined by the input parameters of the NUC. Until 1981, the NUC received some 90 percent of its budgetary recommendations. But from 1982 on, when oil revenues had fallen off, it has received as little as 50 percent. The lack of funds has led to negotiations over the scarce resources, rather than allocations according to cost.

Institutional uncertainties stem from two other features. First, enrollment formulas are often too sensitive to short term fluctuations, and are based on previous rather than current year enrollments. Ontario has attempted to "buffer" its formula by using enrollment bands within which funding remains constant. That is, funding changes are not implemented until enrollment changes three percent in either direction.

Most input funding mechanisms fail to provide efficiency incentives. While input funding essentially compensates institutions for costs incurred for salaries and physical needs, it does not really establish cost norms per output, nor does it provide incentives for institutions to lower their costs. If governments simply purchase "inputs" to educational activities, there are no guarantees that those inputs will be used to capacity or that institutions will seek to better deploy their resources. Funding formulas, give institutions a tremendous incentive to expand inefficiently when resources are provided at average rather than marginal cost.

A central motivation behind the UK's change in funding is to prevent institutions from expanding simply on the basis of average cost. Similarly, Japan has experimented with

"throughput" formulas for institutions. To the extent that institutions conform to these measures, they can receive extra funding.

Input funding leads to three problems with respect to responsiveness. First, budgeting practices can encourage instruction that is out of kilter with labor market demands. Skills and course supply are often out of touch with labor market demands because the government is either implicitly or explicitly determining supply. Explicit determination occurs if the government places numeric restrictions on courses. Implicit restrictions often occur with funding formulas because of the signals transmitted with weightings which are often arbitrary. In Indonesia, for example, there are no weightings by field of study. Since institutions with scarce resources have an incentive to spend money on less expensive fields, such as the social sciences, institutions could be expected to provide little training in science, engineering and medicine. It is not surprising that Indonesia's institutions offer relatively few places in the more expensive fields; 53 percent of all students study social sciences, while only two percent study basic sciences.

Similarly, in Ontario weightings are used to increase graduate programs in order to "Canadianize" university staff. As noted, post graduate enrollments received six times the funding of undergraduate arts enrollments. The labor market demand for Ph.D.s, however, was not sufficient to absorb the large number of graduates, and many Ph.Ds were unemployed. In a subsequent about-face move, the government has required institutions to shut down programs.

A second basic problem with input funding is that it promotes homogeneity in institutions. The use of indicators to allocate funding presupposes a "norm" for institutions, to which they should all converge. Underlying the norm (indicator) is the idea that it is a proper target towards which institutions should move. This may not always be the case, however. Similarly, the use of statistical - norm indicators to allocate funding may lead to an "anti-Robinhood effect" where the funding mechanisms rewards the successful and already well funded institutions (Kells 1990).

In fact, most input funding techniques actually provide disincentives to diversify activities and sources of funding. Many funding formulas either deduct or limit the amount of external funds institutions may generate, particularly through fees; Ontario and Japan constitute examples of this. Many institutions are therefore penalized for engaging in contractual services with their local community that would enhance their relationship and understanding of local needs. They are also prevented from competing on the basis of price and quality because of a lack of fee differentiation.

A third problem also relates to differentiation: in many instances, input criteria, such as enrollments, not only determine instructional funds, but research funds as well. In small higher education systems, it may be effective to build up research capacity in all institutions. As systems grow, however, this may lead to resources being spread too thinly. The issue was raised recently in the UK, where until 1988, a large portion of research funds was transferred through the block grant from the UGC. Although institutions were free to spend their block grant as they chose, they understood that between 30 and 40 percent of the grant was intended

to support facilities for quality post-graduate training. In the latest funding reforms, however, the government transfers much more of these funds through research councils on the basis of selective peer review. In effect, between 10 and 12 universities will be designated as true research universities.

In the Netherlands, the government has increasingly separated funds for research from teaching. Research budgets, of which 90 percent come from a limited number of approved five-year research programs, are determined by peer review (Acherman and Brons 1989). All funds are transferred to institutions in block grants which can be allocated internally with complete freedom.

Finally governments, particularly in some developing countries, may lack capacity to implement a normative funding mechanism. In Ecuador the government has tried to utilize a student based funding formula for public universities. To maximize their funding, institutions reportedly claim extremely high enrollments that are much higher than true enrollments. However, since the government lacks the capacity to verify these numbers, it is unable to determine if these are simply ghost enrollments. A similar problem has been reported in Mexico, where the government recently implemented an enrollment funding formula. Institutions are including as many people as possible in their enrollment counts in order to increase their funding. The lack of accurate information to verify actual enrollments undermined these funding mechanisms.

Conclusions

Movement towards a more normative mechanism of funding has been a significant departure for countries that were dissatisfied with the results of negotiated funding arrangements. Input cost criteria, most notably funding formulas, have predominated throughout European and North American systems and have allowed for greater autonomy in institutions. In principle these programs provide a means to link funding to the costs of activities, and therefore secure accountability from institutions. In some countries, the lack of institutional information limits the possibility for using such funding techniques. Concerns with input funding have arisen as a result of experience. In particular, they fail to encourage efficiency and also inhibit the process of institutional differentiation that becomes critical as higher education systems grow in size. Some important experiments will need study over the next few years, in particular the use of marginal cost criteria for expanding systems, as well as the market oriented bidding process in the UK.

6. Output Funding

Input-based funding may encourage high unit costs -- either due to poor resource utilization, or a high cost per graduate because of student drop-out and repetition. Some allocation systems link subsidies to outputs rather than inputs in an attempt to avoid high costs. As discussed here, output funding is concerned essentially with effectiveness in producing graduates. While emphasis is on quantity, quality of output has been accorded some importance and has constituted an important control element in many output funding systems.

A major concern motivating governments to develop output funding techniques has been the high cost of producing a graduate, due either to institutional inefficiency, or more likely, to a poor flow of students through the system. Output finance provides a means of avoiding these inefficiencies and of promoting a greater output per unit of resource. However, government controls have not always been conducive to the achievement of these aims.

Of the countries that have developed output funding, all impose strict limitations upon institutions with regard to selection (typically automatic admissions policies) and cost recovery (particularly with regard to imposing student fees), as discussed in Section 2. These two restrictions have led to high rates of repetition and dropout because of lower student quality and minimal incentives for students to finish quickly. Restrictions with regard to internal allocation decisions tend to be less strict, since an output funding technique requires that institutions have freedom to find solutions to the cost problem, once they are provided with incentives to do so. The Dutch say that their funding mechanism allows the government to "steer institutions from a distance".

Experience with Output Funding

Several university systems with high student repetition and dropout, have devised mechanisms to create incentives for institutions to reduce "wastage". Besides pedagogical problems within institutions, there are two general government policies that promote inefficient student flows: open enrollments, and generous student support schemes. If institutions are not selective, students who are not capable of handling workloads at universities, will fall behind. Second, when students receive better standards of living as a student than if they graduate, they have an incentive to stay in school, particularly if tuition costs of these additional years of study are minimal.

In Finland, the government allocates a component of funds on the basis of cost per graduate, rather than per student enrolled. The government calculates how long students need to complete their studies and annual funding is adjusted accordingly. It compares this figure

with the projected output of degrees from the universities. In essence, when students take longer to graduate than the period allowed for them in the funding calculation, institutions are penalized.

The Netherlands, with an automatic admissions policy, has developed a more complex approach to encourage de facto selection to improve student flows. An important element of their funding formula is that it provides incentives for institutions to weed out poorly performing students early on, rather than later. The Ministry of Education, which handles the allocation of public funds, distinguishes between graduates and dropouts. The universities receive much less funding for students that leave without diplomas than for those who receive them. The formula essentially grants a university 4.5 years of annual unit cost funding per graduate, and 1.5 years for dropouts -- regardless of how long students take to complete their studies or at what point in their studies they drop out from the institution. The dual incentives are both to weed out poorly performing students early on, and to get people to graduate as quickly as possible.

In Israel, performance based funding relies on auditors who examine institutional "productivity" -- loosely defined to include teaching and research output. Since 1974, funding decisions have been made by an independent funding body, the Planning and Grants Committee (PGC). PGC funds are divided into the following areas: direct allocations for operating expenses (the majority of PGC funds); earmarked funds for research and equipment; matching funds; and development funds. Direct funds constitute some 75 percent the PGC total grant -- but over the last few years the PGC has been channeling more of its resources through the other mechanisms, particularly earmarked funds for research and equipment.

The PGC determines budgets on a "two-track" basis: one related to input costs, the other based on output productivity. The first review, conducted by PGC staff, examines proposed budgets on the basis of enrollments, staffing and cost norms. Independent auditors and PGC staff conduct the performance review which establishes a range for the institutional budget related to its productivity for teaching and research. Furthermore, there are periodic inspections of departments and research units by "review committees" from outside institutions. The range of allocation determined by the second group is compared with the calculations of the PGC; if there is a discrepancy, the PGC takes both reports into consideration (Iram 1990). Because of the subjective evaluations, there is more scope to assess the quality in addition to the quantity of output.

Consequences

Most of the experience with output financing is too recent to draw any certain conclusions. In the Netherlands it has improved student flows - or at least the efficiency in weeding out students, in the absence of selection to the university. Table 6 uses the ratio of graduates over all university leavers to illustrate the improvement.

Table 6. Graduates vs. Dropouts in Dutch Universities 1980-1987

Year	Total Outflow (Graduates and Dropouts)	Number of Graduates	Graduates as Percent of Total Outflow
1980	22,784	10,832	47.5%
1981	20,312	11,075	54.5%
1982	20,779	12,583	60.6%
1983 *	19,077	14,230	74.6%
1984	22,288	14,670	65.8%
1985	24,896	16,062	64.5%
1986	24,971	17,376	69.6%
1987	31,724	25,495	80.4%

* year in which reforms introduced.
Notes: excludes students studying part-time. 1987 is estimated
Source: Kaiser, et al 1989, cited in Florax and Koelman 1989.

In 1980, more than half of all Dutch students leaving higher education were dropouts. After reforms were introduced in 1983, the graduation rate sharply increased as a result of structural changes to reduce the length of courses. After the one-time improvements from structural changes, the number of graduates has been steadily increasing, while most of the dropouts occur early in the education process.

While the new funding approach has helped improve the student flows at the Dutch universities, it is not clear that this was the only, or in fact the best, means to correct the problem. A similar situation was corrected in Germany by improving curricular obstacles that encouraged poor student flows. In addition, such a funding mechanism may penalize and reward institutional programs unfairly. A central issue is the reasons for student dropout or repeat. In the Netherlands, repetition is partly a consequence of the quality of entering students. Low selectivity (automatic admissions) implies that institutions are likely to have a lower average quality of student. Many universities provide "remedial" courses to students in areas such as mathematics when they pursue science fields. Therefore such blanket penalties as imposed by the Dutch system may discourage universities from offering necessary programs. The Denmark experience lends support to this criticism: while institutions are given financial incentives to improve student flows, the remaining external examination system to ensure quality has meant the incentives have had only a marginal impact on student flows. By ensuring that quality standards were maintained, the experience suggests that the absence of improved student flows may have resulted more from the need to bring students up to university standards, rather than institutional inefficiency.

In general, the countries that have implemented output funding formulas have found it necessary to strike a balance between responding to the incentives for efficiency (adjustments to funding) and annual stability. If all institutional funding is based on performance, the year to year uncertainty may complicate planning and discourage institutions from making investments that will lead to future improvements. In Denmark, output finance constitutes only five percent of the core allocations to institutions. Similarly, the funding reforms in England pertains to 10 percent of annual income. In Israel, assessments are flexible in that they provide ranges of satisfactory performance within which funding can be given.

Output funding suffers from many of the same problems as input funding with regard to encouraging differentiation and responsive institutions. After developing a hypothetical cost per graduate, there is little attempt to recognize variations between institutions that may be desirable. The Dutch authorities are still seeking to improve its funding techniques so that it can promote a more diverse and responsive system.

Conclusions

Output funding perhaps offers a second best solution to inefficiencies that are caused by faulty incentives elsewhere. The Dutch experience is promising, and yet they are still seeking to reform their funding mechanism -- mostly due to problems with institutional diversity and responsiveness. One of the enduring problems of such funding, however, is to provide incentives that are sufficient to improve performance, but not too much so that university activities are excessively disrupted. In addition, most output funding has evaluated the quantity rather than the quality of output. Stimulating quality is an important priority in many developing countries. Output funding has also been less successful at encouraging diversity and flexibility among higher education institutions, so that they are capable of adapting to changing student and labor market needs.

7. Student Based Funding

The last four chapters have examined mechanisms for channeling subsidies directly to institutions. Input and output funding mechanisms utilize criteria of cost to establish annual budgets, while negotiated funding results from both political links between institutions and the government, and admissions policies that do not make sense given the available funding for higher education. An alternative path, discussed briefly in Section 1, is to channel subsidies via students, rather than directly to institutions. This indirect approach, in which governments support students rather than institutions, without necessarily yielding budgetary savings, has considerable implications for institutional incentives. In discussing the possibility of funding via students rather than institutions, it should be kept in mind that the two are not mutually exclusive. In this section, we explore the rationale for student based funding and examine in more detail the experience with the one higher education system to make this approach the center of reform: Chile.

Rationale for Channeling Subsidies via Students

The prime example of student based finance is voucher funding. Vouchers have been discussed for the most part for primary and secondary schools, although there have been some suggested applications to higher education as well (Peacock and Wiseman 1964; Barnes and Barr 1988; Stager 1989). Under a pure voucher plan, institutions would be made wholly autonomous in setting fee levels, while the government's main intervention for undergraduate instruction would be through student support. Student support could take the form of individual grants comparable in level to the previous average level of subsidy, or publicly sponsored student loans. The size of student support in the form of grants would typically be less than or equal to fees in the new system. Proponents see vouchers as a means for incorporating market mechanisms into public subsidies.

Student based funding is also expected to increase the equity of higher education systems by increasing overall access through stimulating increased provision of educational places. Critics, however, argue that vouchers may have negative equity impacts because a two tier system could emerge whereby poorer students would attend lower cost institutions, while wealthier students might use their vouchers to supplement payments at expensive private institutions.

Student based funding techniques promote competition that, in turn, is expected to stimulate efficiency and quality. Competition, at the higher education level, would be promoted on two levels: students would compete for support and higher education institutions would compete for students.

Students compete for support. The government would limit the number of students receiving financial aid. Allocation decisions could be made on the basis of ability and/or need. Aid could be differentiated so that poorer students receive more than their tuition costs.

A simple scenario would be to take a university system where the government was providing subsidies to institutions, averaging say $1,000 per year, for 10,000 students. The government could remove those subsidies to institutions and grant 10,000 students a year a voucher worth $1,000. Institutions would be free to set tuition fees, and some would raise them beyond the size of the voucher. From an immediate fiscal standpoint, this change would be neutral. But over time, as pressures to expand the system grew, a government might have a clear mechanism to limit public subsidies to only the best students. The government might wish to differentiate the value given on the basis of the course of study taken; those who qualified for medical training, for example, might receive more than those who qualified for social sciences. And the government might also want to impose restrictions on the number of years for which the voucher is available for use, in order to promote efficient student flows.

As pressures to expand systems increased, governments could explore a variety of options: limit the number of voucher-financed students, while letting the remaining students pay full cost fees; move more gradually towards loans instead of grants; let inflation erode the value of grants, while increasing the number of grants given. No matter which option was adopted, institutional budgets would remain in line with costs, so long as the institutions had control over admission and tuition policies.

Institutions compete for students. The second level of competition promoted would be among institutions for students. Institutions would rely for the most part on fee income, while still receiving government support for capital expenditures, perhaps some base funding and, most importantly, funding for research and post graduate training. But under such a proposal, institutions would be free to set their own tuition charges. Furthermore, institutions could differentiate their fee policy, depending on the type of market they wanted to satisfy: they could be high fee, high quality; low fee, lower quality; differential fees by course of study, according to costs or potential future income. The fees could be above the value of the voucher -- some students might choose to save money and it to their living expenses, others might contribute from their own savings for more expensive courses. Furthermore, to attract voucher holding students, institutions would both have to open up programs that responded to student demands and be more likely to close programs that did not (Stager 1989). If student demand does in fact correspond to future labor market demands, then a useful signalling mechanism would be introduced for increasing the external efficiency of higher education.

There is an important practical benefit of student based funding over the norm based input and output techniques -- namely, the government does not need to depend on as developed an infrastructure to report information so that institutions can be assessed. As mentioned before, one of the potential limitations of input and output funding in developing countries is the lack

of institutional capacity to use indicators. Student based funding might obviate the need for such capacity.

In many ways, the UK's funding reforms bear elements of this student based competitive strategy. Students compete for support by satisfying relatively strict academic requirements for access to higher education. Once they have satisfied those standards, they are guaranteed free tuition. Maintenance grants are allocated on need, not merit, criteria. The new funding process, of bidding, requires institutions to compete for students. Institutions set the cost at which they will accept more students in given fields, and enter a bid. When the bid is accepted, they are obligated to fulfill the bid.

Case Study: Chile

Chile's higher education system underwent major financial reform in 1981. Before the reforms, both public and private universities received public subsidies. The new system has abandoned the terms public and private, and simply distinguishes between those institutions that receive fiscal support and those that do not. In the fiscally supported sector, institutions must compete for a portion of their non-research funding, which flows through three government channels: a base of direct support for research capacity and basic institutional infrastructure; a variable amount known as indirect support, which is allocated via students and not directly to institutions; and a supply of funds for student loans (and more recently scholarships) to be managed by the universities. In addition, universities collect fee revenues for approximately 25 percent of their income and for research grants on a peer review basis from national research councils.

Under the planned reforms, direct grants to universities were to fall to 50 percent of the 1980 total allocation.[10/] These direct funds were to provide sufficient resources to pay for institutional infrastructure and part of teachers' salaries. Replacing the other 50 percent of previous allocations was a competitive pool of funds which constitutes the "indirect" channel. This funding channel operates similar to a voucher since there is a limited number of funding granted to selected students each year (although the student does not actually receive the money). The size of the indirect allocations is based on an institution's ability to attract "top students", initially defined as the top 20,000 grades on secondary school examinations (of 30,000 who matriculate each year in public universities).

Because it reinforced existing quality differentials, the mechanism was altered in the mid 1980's so that all 30,000 students carried at least some indirect funding. A second change eliminated the weighting by field of study because these were believed to promote expansion of courses that bore little relation to labor market priorities. In 1990, a further modification has

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[10/] These funds had been determined both on enrollments and historical contingencies.

enabled all universities (including the truly private universities) to access indirect funding (Covarrubias and Gonzalez 1991).

Thus, the new funding mechanism creates two basic channels to provide income for instructional costs. The first channel are tuition fees, for which the government provides limited subsidies through public loan funds and scholarships. The second channel is the indirect funding mechanism, which provides the best students, essentially, with a voucher, which can be taken to any university. Competition is promoted both through tuition levels and most crucially through institutional ability to attract the limited number of students that carry the vouchers.

Macro-economic difficulties, however, limited the government's ability to maintain funding during the 1980's. In 1990, institutions received only about 60 percent of the resources forecasted in the initial reform plan. The most notable shortfall was in indirect funding, and thus it is difficult to assess what the impact would have been had the funds been sufficient to stimulate more competition. The dependence on a diverse set of funding sources, however, has significantly mitigated the impact of reduced public resources.

Consequences. Despite the macro-economic problems, Chile's university system appears to be more efficient and stable than almost any other in Latin America. While the funding approach is still being modified, several lessons can be learned from the experience to date.

A first notable problem was that the quality incentives did not always lead to desired results. Indirect funding was intended to encourage efficiency gains and quality improvements to attract students. But rather than making such changes, some of the universities enticed students with tuition discounts.

An important current issue is the equity of the system. The student driven model, with high tuition fees, partial vouchers and loans, has resulted in difficulties for lower income students in meeting the private costs of education. Chile has experimented with a student loan program, but this has not resolved equity problems since many students who are interested in studying in fields with low private returns are effectively denied access (Covarrubias and Gonzalez 1991). As a result of the equity problems and the generally poor experience with loans (Albrecht and Ziderman 1991), both institutions and the government have moved away from loans, to a mix of loans and grants. In 1990, the government introduced a new scholarship fund initially to finance roughly 4,000 students a year at nearly US$ 1,000 per student. The figure should rise to about 20,000 per year by 1995.

A third issue is whether the indirect funding promotes student or institutional choice. In the first phase of the reforms, the additional weightings given to science and medicine courses led institutions to entice the best students to study in the sciences. But there was no clear manpower demand in these fields in the Chilean economy. It seems that institutional incentives to attract students outweighed student ability to interpret labor markets. Rather than reacting to labor market signals, the system reacted to government pricing incentives.

Conclusions. During the 1980's, Chile's higher education system underwent radical financial reform that bears important lessons for other countries. Student based funding has changed the incentives under which the system operates, and reduced fiscal burdens. Competition has been promoted and the need to respond to student demands has changed the institutional outlook. Problems have arisen, particularly in securing access for low income students. However, many of these problems of access are being tackled and with private expansion, a large increase in supply of quality higher educational opportunities will result, with far less government burden than in most other developing countries.

Problems with Student Based Funding

The Chilean reforms have been enacted too recently to provide clearcut conclusions on their efficacy, or that of student based funding in general. While such programs of indirect student support offer the promise of important gains, there are also several theoretical and practical problems that could emerge.

First, a strongly student driven system could cause a drop in higher education standards. The distinction between the human capital model and screening model of higher education, a continuing subject of debate, is relevant here. If students enroll in courses of higher education in order to acquire skills that are in demand, and rewarded, by the market (the human capital investment approach), then student choice should be promoted. But where students seek diplomas, less for any additional skills but mainly to entitle them to entry to higher paying jobs (the screening model), course content and standards are less important to them. Indeed, many students would simply choose the easiest route to a diploma, and those institutions that have low standards. Students might pressure institutions to become more lax in their grading assessment. Similarly, student based funding might encourage fadism that could be both costly and inefficient for institutions. Combining vouchers with external assessment for quality control might be one way of mitigating these problem.

Second, a student driven system makes less sense in a country where labor markets do not operate smoothly. One principal justification for a student driven system is that they are the best (although imperfect) interpreters of labor market demand. Yet in many developing countries, where interventions have created segmented labor markets, or other distortions, students will not be in a position to react to these signals.

A third general problem with the voucher approach is that it could lead to an undermining of science and other costly fields. Science courses tend to be about three times as expensive as arts courses. While institutions could charge differential fees, it is unlikely that potential science students would pay such high fees. In the US, most institutions cross-subsidize their science courses and charge uniform tuition. In a truly competitive higher education system, some institutions could specialize in low cost courses. Those institutions cross-subsidizing science with higher arts fees, would lose students and have to charge more for science. All institutions

would therefore have an incentive to opt out of expensive courses. A solution might be to weight voucher values by course.

8. Options for Reform

This paper has evaluated higher education funding mechanisms from three perspectives: the extent to which they have promoted or inhibited the stability, efficiency and responsiveness of institutions. For the most part, these goals are not being met, particularly in developing countries. First, due to the poor policy framework within which institutions operate, funding has not been stable in relation to the activities expected of universities. Besides macro-economic difficulties, access policies and institutional dependencies on government finance have led to serious declines in effective resources. Second, while often underfunded, many universities suffer from inefficiencies, in terms of resource utilization, staffing patterns as well as poor student flows. These problems have diverse roots, but it is clear that in many instances, neither institutions nor students have clear incentives to use scarce resources effectively. Third, publicly funded institutions often possess little autonomy or incentive to respond to labor market or student demands. Institutional diversification -- in terms of activities, areas of specialization and quality -- has been impeded, and few countries have established clear plans to allow institutions to differentiate and find areas of specialization. As more countries focus on developing non-government sectors of their economies, only a few higher education systems have been adaptive enough to respond to varying demands.

Funding Dilemmas

With regard to funding stability, one must ask if **funding mechanisms can adapt to periods of austerity as well as booms?** Most of the funding mechanisms work well while resources are plentiful, but once resources are scarce, budgets can fluctuate significantly. Three factors significantly assist institutions in achieving stable funding. First, a mechanism to control admissions so that they do not continually increase while funding is decreasing. Second, a diverse funding base helps to buffer any decline in one source of funding. Tuition income, for example, ensures that funding is proportional to enrollment. Third, institutions need both the freedom and incentives to eliminate inefficient programs when their incomes fall, so that their resources can be more effectively deployed.

The UK during the 1980's provides an example of how institutions that do not charge tuition might behave. When funding was cut, the UGC, because of its strong position, developed a plan of enrollment cuts to ensure that funding per student remained constant. In addition, some institutions, such as the universities of Salford and Warwick, responded to severe budget cuts through curricular changes that eliminated inefficient programs, while diversifying their activities to engage in profit making activities with their local industrial and commercial communities.

A common reaction of fee charging public higher education institutions during times of austerity is to increase fees to make up for lost income, while introducing a redistributive scholarship scheme to offset the impact of higher fees on low income students. The University of the Philippines has recently combined tuition rises with tuition waivers and expanded scholarships for low income students. North America's Great Depression also offers some insights into how institutions can cope with adversity. In Ontario, real tuition doubled between 1929 and 1936, at the same time as institutions' incomes from government grants dropped from 60 to 50 percent of total operating income. Tuition was raised from 22 to 30 per cent of income. Yet, while fees rose sharply, undergraduate enrollment in Ontario's universities rose by 23 percent (Stager 1989). The increase in income was supported by redistributive scholarship programs to help low income students. Israeli universities, during fiscal shortages, reacted by raising tuition fees from 4.3 percent of total income in 1983 to 18.7 percent by 1986 (Iram 1990).

A second dilemma pertains to efficiency: can incentives for efficiency be combined with funding stability and a mechanism to determine when institutional quality will suffer? Incentives for efficient use of resources are clearly important if **institutions have control over their own resources and their enrollments**. But at some point, efficiency gains imply quality losses -- although at what point this happens is always subject to debate. In Ontario, competition among institutions to preserve their relative share (rather than their absolute amount) of public resources, while perhaps healthy for a few years, it has led to reported quality losses. UK institutions fear that the government lacks any end point notion of when institutions are acting efficiently, and will therefore seek to reduce unit cost year after year.

Strong buffers bodies consisting of expert representatives from the universities are often able to assess the trade off between quality and efficiency that the government is not able to evaluate. Similarly, allowing institutions the ability to redeploy resources is essential for efficiency gains. Another option is to rely on the incentives provided by tuition fees. Accountability to users is a strong way to balance efficiency and quality. Competition for public funding, as in the UK, offers a fourth solution. In this way, institutions determine efficiency for themselves. As a general rule, efficiency is better achieved through incentives rather than regulations concerning staffing and resource use.

The third dilemma poses one of the most difficult questions to answer: **If governments provide funds for training, how can those investments be made sensitive to labor market demands?** The question is essentially one of who should be interpreting labor market demands, and translating that interpretation into signals to institutions. There are three possibilities: governments, institutions, and students. Clearly all participants have a role -- although what each of the party's role is, is difficult to answer. Too often, governments have dominated the decision making process. In an age where governments are no longer the only employers of graduates, and in which technological change leads to changing skill demand, governments, while understanding their current skill demands, often have little information on what they will need in the future, nor what types of graduates the private sector is looking for. Nevertheless,

funding to universities, for the most part, either implicitly or explicitly prevents institutions from responding to labor market and student demands for training.

High graduate unemployment and underemployment are explained by a number of factors. In many instances, graduates remain unemployed simply because they are waiting for opportunities in the civil service (Psacharopoulos and Woodhall 1985). Nevertheless, there is often a mismatch between training and labor market demands. As many developing country universities were developed to supply labor to the civil service, training was often geared towards rigid manpower planning targets. One of the most notable training gaps has occurred with engineering. It was once (and still is in many countries) the "conventional wisdom" that countries should focus on supplying more engineering graduates to further economic development. This training was pursued with broad infrastructural and industrial building in mind. However, the absorptive capacity for engineers has rarely matched the supply of engineers in those countries where such manpower planning devices were implemented.

A growing body of literature, both for developing and industrial countries, has pointed to the problems of manpower planning, particularly in engineering fields, and recommends that decision making on fields take place elsewhere. Similarly, a series of studies in Kenya, where universities have been prompted to expand the supply of engineers, has revealed that there has not been a demand for these engineers nor their skills in the labor market (Bennell 1986).

The questions raised by these studies is who should determine the supply and type of training and through what mechanism will skill demand changes be reflected in the university. Current literature, has suggested that students, while imperfect, are the best predictor of future labor market demands. Universities should interpret those demands, and respond as they see fit, and as they are able. Unilateral government decision making, however, has not proven to be effective. Channeling subsidies through students may encourage decision making that relates to labor markets rather than simply government interpretation of them. Encouraging institutions to work with future employers, and integrating into their surrounding community is another effective approach.

General Principles for Improvements in Funding

The first priority in most developing countries should be to stabilize the basic decline of resources to universities by limiting institutional restrictions over enrollments, financial sources and internal allocations. Only within this framework can institutions begin to improve their quality, adapt to changing demands and operate more efficiently. The key to reform will be to combine a more effective policy environment with a funding mechanism that ensures accountability over public funds.

Linking funding and admissions policies. The first priority of many developing countries must be to link subsidies to admissions or enrollment policies. Automatic access and

quality are difficult to achieve, especially with declining resources. If maintaining access is an important political goal, lower cost solutions (such as distance universities, or private institutions) should be explored. Governments should bear in mind that enrollment policies can be the most destabilizing element to university stability, quality and efficiency. But movement towards a normative funding mechanism will be prohibited until governments allow stricter admissions criteria.

Linking funding to access can be achieved in several ways: either through funding formulas that account for inputs or outputs, indirectly via student subsidies or some combination of the two. The feasibility of these options depends on administrative capacity (institutional development) in different countries and the structure of the higher education system. If reliable statistics are not present, then norm based funding will probably encounter difficulties, as it has in Mexico and Ecuador. Funding bodies will need to have reliable statistics on cost and activities at institutions to make effective funding decisions.

A second important factor that should be assessed in determining how funding is linked to access is the state of the labor market in the country and its relationship to the education system. Demand driven funding, for instance will make less sense when labor markets are heavily distorted.

Diversification of funding sources. Resources at institutions should be more diverse. Minimizing dependency on any one source reduces potential shocks of eventual changes in available public resources. Institutions have more funds if they have a wider resource base, and tuition ensures that resources are proportional to the number of students. Engaging in resource generating activities such as applied research for local industry furthers this objective. Institutions should be free to engage in such activities, since integration increases the relevance of material covered in institutions.

Tuition (combined with student support) as a significant source of income establishes a sound framework within which institutions can operate. First, tuition creates incentives for increased cost efficiency since institutions must be accountable to their users, especially if there are competitor institutions. Tan and Mingat (1989) revealed a significant negative correlation between the level of tuition in public universities and their unit cost in Asia. That is, higher tuition leads to lower unit costs. If tuition policy is in the hands of institutions, rather than governments, the incentives for efficiency are stronger. User charges also encourage students to finish on time. Tuition also encourages institutional diversity, since institutions must cater to different student demands.

Autonomy. Fundamental to reform in many countries is freeing up institutions both academically and to deploy their own resources. In order for institutions to carry out their duties efficiently and effectively, they need to have autonomy to be innovative, to redeploy their resources and to respond to market demands. Autonomy should be furthered in many instances with regard to enrollments, internal allocations and the ability to seek additional income.

Autonomy does not exclude the need for accountability. Accountability, however, can be achieved through incentives related to the criteria of funding, rather than institutional regulation.

Criteria and Conditions of Funding: Encouraging Efficiency and Diversity

Channeling funds to institutions, particularly with increased autonomy, should encourage and reward institutions that are both efficient as well as those which develop areas of specialization. Funding mechanisms should minimize budgeting on the basis of political criteria, and transfer funds in line with costs and institutional criteria. But this cannot be done unless admissions policies allow for predictability. The funding mechanism should also recognize that activities cost different amounts, and that instruction and research be funded according to different sets of criteria, and possibly through different institutions (i.e. research councils).

Efficiency incentives twinned with funding stability: Institutions need to have constant incentives to try to lower their costs, and yet a mechanism must be in place to ensure that efficiency gains are not quality losses. Tuition is one device, but some of the alternatives used in industrialized countries would be feasible in developing countries as well. Public funds can be adjusted according to throughput or performance criteria. In many instances, competition for funds can promote efficiency. But competition has to be based on criteria other than politicking. In addition to introducing performance incentives, governments should eliminate performance disincentives, such as restrictions which penalize institutions that generate income through fee charging services.

Encouraging responsiveness and diversity: Institutional diversification is a crucial tool through which governments can mobilize their resources for higher education more effectively. And yet, many norm based formulas discourage diversification. Several options to further diversity are discussed below.

Diversification can occur at several levels. On the one hand, institutions can have broadly different missions, e.g. research institutions vs. instructional institutions, as a means to concentrate resources. On the other hand, institutions can be encouraged to seek areas of specialization, rather than duplicating expertise and compromising overall quality. Finally, institutions can try to adapt their course offerings to student demands and local labor market needs. While graduates should certainly come away from their education with skills that enable them to find employment, labor markets in developing countries often do not operate on the basis of market mechanisms.

The first step to promote diversity and responsiveness should be to remove disincentives for institutions to forge links with their local communities. This means not penalizing institutions that engage in profit making service and research activities. Furthermore, positive incentives, such as matching funds, could be phased in. Australia and Israel both utilize a

system of matching grants for outside funds raised, and thus encourage adaptation to local needs.

Second, in larger higher education systems, resources should be concentrated by allocating research and instructional funds using separate criteria. Separate funding bodies, or mechanisms for assessment of funding needs, should be in place.

Third, departmental differentiation and adaptation to local demands could be promoted through competitively awarded funds to begin new programs. These proposals should be reviewed on a merit basis. This strategy has been implemented in India (the Center of Excellence Scheme), Hungary, and many US state institutions.

Finally, tuition differentiation can be used to introduce a demand driven higher education system, which requires institutions to set their tuition in ways that respond to external demands (Stager 1989). Tuition fees could vary within institutions according to program costs, and by private rates of return to a given field of study. Business courses, for instance, with relatively low costs, can charge high fees because of the high private rates of return. Money can be used to cross-subsidize other more expensive fields. Such a demand driven system may be more desirable where graduates are working in both public and private sectors, and where labor demand is related more to market pressures.

Where possible, governments should seek accountability from higher education systems through funding incentives, not rigid enrollment requirements or expenditure policies. Those institutions suffering the most severe financial problems will be unlikely to witness improvements until these changes are made.

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